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ORTHWEST
ENERGY NEWS

Volume 4, No. 1 Northwest Power Planning Council *January/February 1985*

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Idaho

Northwest Power Planning Council
Statehouse Mall
Towers Building
450 West State
Boise, Idaho 83720

Telephone: 208-334-2956

Council Members:
W. Larry Mills
Robert Saxvik, vice chairman

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620

Telephone: 406-444-3952

Council Members:
Morris Brusett
Gerald Mueller

Oregon

Northwest Power Planning Council
505C State Office Building
1400 S.W. Fifth Avenue
Portland, Oregon 97201

Telephone: 503-229-5171

Council Members:
Donald Godard
Roy Hemmingway

Washington

Northwest Power Planning Council
Olympic Tower Bldg., Suite 700
217 Pine Street
Seattle, Washington 98101

Telephone: 206-464-6519

Council Members:
Charles Collins, chairman
Kai Lee

Central

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, Oregon 97205

Telephone: 503-222-5161
Toll Free: 1-800-222-3355
(1-800-452-2324 in Oregon)

Executive Director: Edward Sheets

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The Northwest Power Planning Council is required to develop a program to restore the Columbia fisheries and a regional electric energy plan, to be carried out by the Bonneville Power Administration, emphasizing cost-effective conservation and renewable resources.

Executive Editor: Dulcy Mahar
Graphic Design: Linda Sawaya
News Editor: Steve Engel
Features Editor: Carlotta Collette
Special Departments Editor: Ruth Curtis

EDITOR'S NOTES

We'd like to thank all of you who have filled out and returned our public involvement survey published in the previous *Energy News.* There were a number of good ideas, and some we've already begun putting into effect.

If you haven't sent in your questionnaire yet, please do. We are reviewing all comments carefully and will be finetuning our public involvement program to make it more meaningful and responsive to your needs. Extra copies of the questionnaire are available if you misplaced the previous issue.

Notice: Please note that the Washington Council office has moved from Olympia to Seattle. The new address and phone number are at the left.

Cover illustration: It started with our July/August 1984 issue which portrayed power decision moves on a Monopoly-like board. We decided covers didn't have to be deadly serious. Here was a place to be arty and whimsical. After all, such respected magazines as the *New Yorker* have set the pace.

We had some fun with this cover. Some see it as a take-off on the Statue of Liberty; others read Medusa into it. For our part, we like the pure art of it. The artist, who apparently agreed with us, is *Elsa Warnick. –DM*

CALENDAR

January 27-30 — The American Society of Heating, Refrigeration and Air-conditioning Engineers 1985 winter meeting in Chicago, Illinois. Contact Ralph H. Burkowsky, ASHRAE, 1791 Tullie Circle NE, Atlanta, Georgia 30329 (404/636-8400).

January 28-February 1 — Annual Symposium on "Energy From Biomass and Wastes," Lake Buena Vista, Florida. Contact the Institute of Gas Technology, 3424 S. State St., Chicago, Illinois 60616 (312/567-3650).

January 30-31 — Northwest Power Planning Council meeting in Seattle, Washington.

February 18-20 — "Energy Management Congress" presented by the Association of Energy Engineers in Los Angeles, California. Contact Association of Energy Engineers, 4025 Pleasantdale Rd., Suite 340, Atlanta, Georgia 30340 (404/447-5083).

February 20-21 — Northwest Power Planning Council meeting in Boise, Idaho.

February 26-27 — Workshop on "Measuring the Thermal Performance Characteristics of Windows" in Gaithersburg, Maryland. Sponsored by the Building Thermal Envelope Coordinating Council and the National Bureau of Standards. Contact R. P. Tye, Dynatech R/D Co., 99 Erie St., Cambridge, Massachusetts 02139 (617/868-8050).

March 13-14 — Northwest Power Planning Council meeting in Portland, Oregon.

April 3-4 — Northwest Power Planning Council meeting in Missoula, Montana.

April 24-25 — Northwest Power Planning Council meeting in Seattle, Washington.

May 1-3, 1985 — Symposium on "Small Hydropower and Fisheries" in Denver, Colorado. Sponsored by the Western Division and Bio-engineering Section of the American Fisheries Society. Contact Conferences and Institutes, College of Engineering and Architecture, Washington State University, Pullman, Washington 99164-2992. Phone: (509/335-7225 Nancy Mack) or (503/335-1404 John F. Orsborn).

Compiled by Ruth Curtis

IN THE NEWS

Montana picks Brusett as new Council member

Montana Governor Ted Schwinden has appointed Morris Brusett one of the state's two representatives on the Northwest Power Planning Council. Brusett replaces Keith Colbo, charter member of the Council and former Council chairman. Colbo has been named to serve as director of Montana's Department of Commerce.

Brusett brings extensive finance, management, and decision-making skills to the Council.

A Montana native (his home town of Brusett is named after his father), he leaves the position of director of the Montana Department of Administration. With more than 500 employees, the department's responsibilities include state building codes, personnel, information services (telecommunications, data processing and office automation), and state purchasing.

As director, Brusett was treasurer of the State of Montana, responsible for the state's cash management; state controller, responsible for the state's accounting system; and chairman of the Governor's Capital Finance Council, which developed the state's plan for managing its bonded indebtedness.

Brusett is a certified public accountant, and for 14 years served as Montana's legislative auditor, responsible for conducting financial and program audits of all state agencies.

Brusett said he wants to "properly represent the people of Montana and the Northwest" on the Council. He is, he said, interested in "looking at long-term objectives, and at the critical elements and timing that will enable us to steer a course for the region."

Brusett is familiar with building code enforcement and supports what is being done by the Council with model conservation standards. He recently completed his own energy efficient home.

As director of the Montana Department of Commerce, Colbo will be guiding the Governor's centerpiece "Build Montana" program. There are also plans to transfer the state building code activity from Administration to Commerce, so his familiarity with the Council's model conservation standards will continue to be of value to the region even in his new position.

— Jim Nybo

Morris Brusett

Steve Engel photo

N O T I C E

The Northwest Power Planning Council has filed its brief in the Seattle Master Builders lawsuit before the United States Court of Appeals for the Ninth Circuit. See page 22 for a synopsis of the brief.

Zone 2 energy budget revised for MCS

The Northwest Power Planning Council is revising the model conservation performance standard for residential buildings in climate Zone 2, primarily eastern Oregon and Washington and parts of Idaho. The technical change raises the allowable annual energy budget for a single family home from 2.6 to 3.2 kilowatts per hour per square foot for electrical space heating.

The change is a result of a thorough review of the materials used to develop the standards. This review was conducted in preparation of the Council's brief in a lawsuit brought by the Seattle Master Builders Association.

At the same time, the Council is correcting a printing error which misstated the performance standard for Zone 3, primarily in Montana. It should read 3.2 rather than 3.1.

The Zone 2 change is a technical correction on the cost of one component of the standards, wall insulation, and has no effect on the overall cost effectiveness of the standards. Correction of wall insulation costs indicates that R-31 walls recommended in Zone 2 exceed the Council's criteria that conservation measures cost less than 4 cents per kilowatt hour — the price of power from a new coal plant. As a result of the change, walls in Zone 2 are now R-25. (Higher "R" levels measure increasing energy efficiency.)

Even before the change, the standards cost an average of 2 cents per kilowatt hour, more than meeting the cost effectiveness test required by the Northwest Power Act. The stipulation that conservation measures not exceed the 4-cent limit was self-imposed by the Council over and above the requirements of the Act.

— DM

Public comment given on goals study changes

The Northwest Power Planning Council is currently in a rulemaking process to amend Sections 201 and 1504 (Action Item 36) of its Columbia River Basin Fish and Wildlife Program. The amendment would change the funding source and modify some procedures in the Goals Study. These changes would not deal with the substance of the study.

The Goals Study will assess salmon and steelhead losses which can be attributed to hydroelectric development and operations in the Columbia River Basin. It would state goals and objectives for protection and restoration of these fish and set out methods for measuring progress toward these goals and objectives.

Hearings on the proposed changes were held in each Northwest state in January.

— DM

Mid-Columbia agreement needs one more dam

Partial settlement has finally been reached in the five-year-old dispute known as the "Mid-Columbia Proceeding." An agreement between the Chelan, Douglas and Grant

IN THE NEWS
continued

County Public Utility Districts (PUDs) and the State of Washington (co-petitioning with several fish and wildlife agencies and Indian tribes) should result in reduced juvenile fish mortalities at four of the five dams operated by the PUDs.

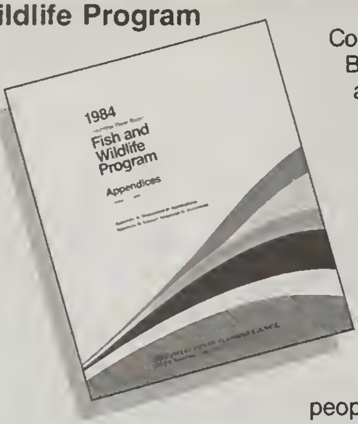
The settlement calls for increased water spill and bypass facilities at the Wells, Wanapum, Priest Rapids and Rocky Reach dams. Spilling water provides juvenile fish traveling to the ocean an alternative to passing through dam turbines, where fish mortalities are high.

Planned bypass facilities at the four dams will include such devices as traveling screens that move fish out of turbine intake channels and into conduits leading across the dam to the downstream side. At Wanapum Dam a large barrier net stretching over 1,600 feet across the opening to the dam's powerhouse will guide fish away from the turbines. Research will continue at Rocky Reach and Priest Rapids dams to find the best way to ease young fish safely downriver. In the interim, fish will be mechanically dipped from the gatewell to temporary bypass channels.

Wells Dam has a unique configuration of spillgates located right over the powerhouse. This arrangement, called a hydro-combine, might, with minor dam modifications, permit fish passage over the turbines, rather than through them.

The question of how to get young fish around the remaining mid-Columbia dam, Rock Island, remains unresolved. Chelan PUD, operator of the dam, has agreed to a temporary spill program for this coming spring migration, but no long-term compromise was achieved. Consequently, Rock Island's future will go back on the docket for a hearing next June. —*CC*

Fish & Wildlife Program Available


1984
Fish and Wildlife Program
Appendices

Copies of the recently amended Columbia River Basin Fish and Wildlife Program are now available from the Northwest Power Planning Council. The new program incorporates amendments adopted by the Council after a year-long process during which the Council took recommendations for changes in the program, held public hearings in each state and received comments on the proposed amendments from over a hundred groups and individuals.

To receive a copy of the new document call or write the Council's Division of Public Information and Involvement (see address/phone on inside front cover). Those people who received the draft amended program will automatically receive a copy of the final document.

Rock Island Dam

Carlotta Collette photo

Model standards offer business bonanza, recent study says

Adoption of the Northwest Power Planning Council's model conservation standards (MCS) will create nearly 19,000 Northwest jobs and generate $137 million in business income annually, according to a report released by the Northwest Conservation Act Coalition.

The report, from the Bainbridge Island, Washington firm of H. Glen Sims and Associates, compared the benefits of saving energy by building homes according to the standards with the benefits of producing that energy from new coal plants. Over the lifetime of houses built in the ten-year study period (1992-2002), the region would increase its employment by more than 180,000 job years.

Building the better-insulated homes would provide more jobs than building the plants, the study found. So would production and sale of the products that go into the homes. The money saved by the homeowners and spent for other purposes would also generate more jobs, according to the study.

The study estimates that the MCS homes built during those ten years would save the region's ratepayers over $1.26 billion because the energy costs much less to conserve than to produce.

"The net result of this study is that the Model Conservation Standards are not only the cornerstone of a least-cost energy future; they are also key to the economic development of the region," said the Coalition's summary. "The MCS are an extremely cheap, job intensive, environmentally benign and flexible resource which uses materials purchased and produced in the Pacific Northwest . . . [They] free up scarce capital for better economic development opportunities." —*SE*

NORTHWEST Shorts

by Dulcy Mahar

Are cattle and crops affected by high voltage power lines? Oregon State University's Eastern Oregon Agricultural Research Center will conduct a three-year study on the effects of the electrical field and air ion levels near the Pacific Northwest-Southwest Intertie. The $1.4 million study is being funded by the Bonneville Power Administration along with eight other utilities and agencies.

It's a bonanza for writers as well as lawyers. The Washington Post and Wall Street Journal have joined a long list of national newspapers and magazines doing series on WPPSS — Washington Public Power Supply System — nuclear plants.

Utility commissioners enjoyed higher credibility ratings than congressmen in a Washington state poll conducted by Market Trends, Inc., for the Washington Public Utility Districts Association.

Bonneville is looking for small hydropower projects to test the feasibility of hydro resource banking. This refers to completing the planning, siting, and regulatory procedures for a project and then putting it on hold until the resource is needed. This allows initial development of potentially needed resources without committing to full development if they are not needed. This options concept, developed by the Northwest Power Planning Council, gives Bonneville the right to purchase the power when it is produced. Developers may submit proposals to Bonneville through February 28.

Surplus power sales have brought in an extra $49 million for Bonneville since it implemented its new interim Intertie access policy. The Intertie is the transmission system for moving Northwest power to the Southwest. The agency earned $81 million for export sales between September 14 and November 30, 1984, compared to $31 million for the same period the previous year.

"Perfecting the Plan" is the name of the Northwest Conservation Act Coalition's proposal for the 1985 regional power plan to be developed by the Northwest Power Planning Council this year. The document focuses "particularly on opportunities for including more conservation in the plan," according to the NCAC *Report.* Copies of the proposal are available from NCAC, P.O. Box 20458, Seattle, WA. Phone 206-624-2875.

The average cost of electricity in the United States is 7.67 cents per kilowatt hour, according to a report issued by the National Association of Regulatory Commissioners. The report goes on to say that residential electrical bills vary widely with those in the Northwest (averaging 4 cents) and Rocky Mountains the least expensive and those in the Northeast and New England the most expensive. (Source: *Insider,* Puget Sound Power & Light Company)

Bonneville power rates could rise more than 50 percent if some federal budget makers have their way. Some proposals call for a 50-year repayment schedule for the approximately $8 billion Bonneville owes the federal government. According to political columnists, federal power prices may be one of the biggest regional issues before Congress this year.

Nearly half of all new single family homes built in 1984 were heated electrically. The American Society of Heating, Refrigeration & Air-conditioning Engineers *Journal* reported 49 percent of the new homes used electrical heat, which, according to the *Journal,* is becoming the favored energy source for residential use. The article also states the use of heat pumps is on the rise. The *Energy Conservation Digest* agreed with the 49 percent figure but disagreed that it is a trend toward increased use, noting that electricity's share of new single-family homes had declined from 52 percent in 1978. However, the *Digest* reported that electrical heat was used for 70 percent of all new multi-family housing, up from 68 percent.

The possibility of converting WPPSS nuclear plants 1 and 3 into coal-fired generating plants is the subject of a study commissioned by the Snohomish County Public Utility District. The two plants are currently in mothballs, and there is concern that the plants could eventually become obsolete with new federal design recommendations if they remain mothballed for some time. (Source: *Public Power Weekly*)

A Montana legislative committee has recommended the state adopt model conservation standards proposed by the Northwest Power Planning Council. In a 4-2 vote, the Montana Legislative Power Plan Committee recommended new statewide energy codes to promote energy conservation and called on the state's legislature to adopt the Council's standards.

The Columbia River had an all-time record run of steelhead according to the Columbia River Inter-Tribal Fish Commission. Some 315,000 summer steelhead crossed over Bonneville Dam to travel upriver, the most since the dam was built in 1938 and fish began to be counted according to *CRITFC NEWS.* A record number are also reaching Idaho after passing the last Snake River dam.

Oregon Historical Society photo (Negative #10666)

Interview: New chairman takes Council helm

Chuck Collins

What do you see as the biggest challenges facing the region?

The biggest challenge is finding a way to focus on the future in ways that we have in the past. The result of the last half dozen years of travail has been that we've lost some of that ability. We have an environment in which it has become very costly for utilities to be concerned about the future. Understandably, decisions are being made which don't consider impact in the long term. This is not the system we had in the past. Utilities benefitted enormously because they considered the future. We've got to restore that.

Words themselves are powerful. For the past 40 years, this region has been driven by the idea of the "future." That word has inspired us to overcome parochial interests and form alliances between urban and rural entities, public and private utilities, and even between national and international interests.

In the late 1960s and early 1970s, the word "deficit" became the driving force. It also embodied a concern about the future that helped form alliances. But it was a word that we failed to examine carefully and to which we overreacted.

Today, we are being driven by another new word — "surplus," a word that may be equally imprecise and to which we are possibly overreacting. The word "surplus" reflects less a concern about the future than a concern with the immediate. Our preoccupation with the immediate — and temporary — surplus is setting a course that holds as many possibilities for harm as did our actions in the late '70s.

What advice would you give the region to avoid this course?

It is important for us as a region to examine our present actions and their possible consequences, to look at the nature of the

by Dulcy Mahar and Mickey Riley

surplus and see if the exercise can't help us recapture the cooperation and concern we once had regarding the future.

If there's any one point we tried to make in the first plan it's that the future is uncertain. The region has accepted this uncertainty in high forecasts, but it hasn't learned the lesson with the low forecasts.

Recent discussion ignores the possibility of a stronger economy, of the fact that WPPSS (nuclear plants) 1 and 3 may not exist, and that major long-term thermal resources may be committed outside the region. The required posture in the face of uncertainty is not to do nothing. It requires that we take actions and prepare responses. We have convinced ourselves that we have an unprecedented surplus on the basis of 1 to 1½ percent load growths per year. This may prove a shaky foundation.

My own opinion about the surplus is that it's not unprecedented in respect to size. What is unprecedented is the expense. And the utilities, understandably, are preoccupied with the problem of that expense. Many of them have enormous sunk costs along with reduced revenues. They are trying to keep rates as low as possible and still balance the books. The private utilities are pressured by both their ratepayers and their stockholders. Many of them see selling power as their only option.

What specifically do you see in the future?

In the future, we will see smaller inventories of reserve as a function of costs. Three years ago that would have been an inflammatory statement. Now it's old business. It strikes many as ironic that the Council is in the position of talking about the need to prepare for retaining and acquiring resources.

It is likely that we will be looking at deficits by the start of the next decade unless we begin to develop new resources. The Council has identified the resources that we think are the cheapest ones for the region to buy. The development of these resources takes time and requires the efforts of all of the region's electric energy policymakers — Bonneville, utilities, state and local governments, and the Council. We all need to begin looking beyond the current surplus and start taking the steps necessary to avoid the crunch that will otherwise occur when the surplus of electricity ends — and it will end.

What do you see as the major issues in developing the Council's 1985 power plan?

The biggest issue is how the many players in the electrical energy industry of the Northwest are going to act. Are they going to act collectively and cooperatively? We simply have to establish — and by we I mean the industry not the Council — a way to identify the future which should be planned for, what resources we want, and how to pay for them. This will take a level of cooperation and collaboration that simply doesn't exist now. This will involve the utilities, Bonneville, the regulators, and the Council.

The institutional roles and the level of cooperation in planning and developing resources will be critical. When Congress passed the Regional Power Act, it assumed that Bonneville would provide the financing mechanism to develop the region's conservation and resources. But with only 40 percent of the utilities signing Bonneville's conservation contracts, we have to turn to new and creative ways to reestablish a cooperative, regionwide approach.

Certainly the model conservation standards will be a major issue. The Council will be reviewing any new information that is available on the standards.

The future of the region's aluminum companies is another obvious issue. They have become a major source of planning uncertainty both in the short and the long term. Their increasing volatility creates real problems for the region because of the magnitude of their load, which is approximately 2,800 megawatts. They also represent an important industry to the region with a work force of over 10,000 people and an annual direct payroll of $500 million.

The Council will also be taking a hard look at both out-of-region sales and purchases. We will continue to monitor negotiations to sell surplus Northwest power to California. We will also be making a detailed exploration of the long-term potential for purchasing power from British Columbia. B.C. Hydro may have a substantial surplus of low-cost power for some time. The Council will look at whether or not purchasing power from these sources would be cheaper than building new resources within the region.

We will also be looking at the costs and savings of conservation programs in all sectors of the economy; the costs and availability of new hydro, cogeneration, combustion turbines, and coal plants in the region; and what the best mix of all these resources will be to meet the region's future energy needs.

What conditions have changed since the 1983 plan?

Today, the region's utilities are confronted by two factors: risk and cost. When the Regional Act was passed in 1980, the assumption was that Bonneville would be the regional risk taker, that utilities would place their loads on Bonneville. But conditions have changed in the last three years and many of those assumptions are no longer true.

The Regional Act was a compromise among the various interest groups who

Carlotta Collette photos

grew up on, and depended on, the federal hydro system. It provided a framework for sharing that system. But the Act did not end all the thinking we need to do as to how we are going to organize ourselves for the next round of resource development. Most important, the Act did not prepare us for the complexity of planning and coordinating regional conservation programs.

The current surplus is very likely to be over by the turn of the decade, and it is now up to those same groups — the utilities, the utility commissioners, Bonneville, the direct service industries, the ratepayers, and the Power Council — to either pursue their own separate immediate interests or to forego some of that and focus on a larger and more long-range goal — that of providing the region the resources that it needs at the lowest possible cost. It is an opportunity to recapture our past cooperation and renew our commitment to the region's economic future.

What's your prognosis for the model conservation standards?

I am confident that efficient building will happen. I hope it happens at least in part by codes, because that is the most equitable method. But it can also be accomplished through utility incentives which could be similar to home weatherization programs going on now.

The surcharge in the law is a strong remedy. What has not been clearly communicated — and the Council has to bear part of the blame if it's a communication problem — is that there is a variety of opportunities available to utilities to avoid the surcharge. A myth has emerged — and that myth is contradicted by both the law and the action plan — that somehow utilities will automatically be surcharged if their governments fail to adopt codes.

The model conservation standards do not mean and never have meant codes solely. Codes are one of several avenues by which to achieve the standards. There has been a strong reaction that the Council was taking utilities hostage, and they had no escape. If that had been the case, they would have had cause for concern. We are now attempting to clarify this. Failure to adopt codes will not automatically mean a surcharge. Failure to achieve energy efficient buildings or their equivalent is what will result in a surcharge.

There are a lot of opportunities there — codes to some level with incentives to build above code, everything from incentives to a solar hot water program. In some ways this issue illustrates the problems the Northwest is facing now — communication difficulties, suspicions high, and a readiness to join disagreements.

> A policy-making body will not flourish if it relies on written authority to make things happen.
>
> It must develop policy that is so logical that others participate voluntarily.

What is the current status of out-of-region sales?

Some negotiation is going on now and utilities continue to pursue their own sales. Hopefully, the sales can be structured so that they're in the interest of both the Northwest and California.

What the Council doesn't want to see is cost-effective resources sold to California for a long period so that they are effectively lost to the Northwest. However, no individual utility can be expected to hold a resource for the region without some form of adequate compensation.

We must remind ourselves of how closely the economic base of the region is tied to electrical energy. Five leading industries in the Northwest — aluminum, agriculture, lumber, pulp and paper, and chemicals — are heavy users of electricity for their industrial processes and are extremely sensitive to price and supplies. If we sell portions of the region's existing resources on long-term contracts and have to replace them with what will undoubtedly be more expensive resources, and if we fail to develop cheap conservation and instead have to build new plants at higher costs, what will be the effect on the region's economic base? How competitive will these industries be on the world market? And what will we have done for ratepayers?

In addition, we must ask if the region's environmental interests are served by running coal plants to produce energy that will be shipped out of the region. And what about new industries? The individual company that lobbied the Council most heavily during the development of the first plan was Hewlett Packard, and its major concern was the reliability of the power. These are desirable industries for the region because they are job-intensive. But they must have a reliable supply of electricity.

How do you respond to recent criticism that the Council is overstepping its bounds by talking about an oversight policy on out-of-region sales, as well as other areas?

The Council's oversight in this area is the regional plan and the forecast. Neither prevents private utilities from taking their own actions. What we have is not utilities trying to act against the public interest, but utilities trying to recoup their costs. We don't have very good mechanisms for accomplishing this. The regional plan can be helpful. It will be effective to the degree it represents consensus. The challenge is not in defining what isn't in the plan, but in defining what is. We've defined a corral, and we've spent a lot of time talking about what's outside that corral. Now we have to talk about what's in it and how we're going to keep it in.

I see a prospect for much more collaborative work. There's no question that in the first plan the Council was seen as pitted against the utilities over Skagit/Hanford and WPPSS 4 and 5. The conservation and renewable resources we put in the Plan were seen as competition for those plants. That inherent conflict doesn't exist this time. We have the opportunity for cooperation.

We're talking about free agents trying to identify their collective interests. We are now truly at a point where — outside of the fish side — we don't have a host of opportunities for conflict. It's in everyone's best interest to build the cheapest resources.

You mentioned fish interests. What conflicts do you see?

A restoration of fish runs is required by law, and the utility system will bear the major portion of the financial burden. The questions are how much and how fast. The parties don't have similar interests. Even in the area of fish development, however, I'm convinced the opportunities for conflict are overstated. The utilities and tribes are more reasonable than their press suggests.

The Council has embarked on an effort to identify salmon and steelhead losses caused by hydro development and operations and to set goals for their restoration. We believe this is critical. Once the size of the loss and restoration requirements have been clearly established, many of the current conflicts will diminish.

What is the most important thing the Council has accomplished?

The most important thing the Council has accomplished is that its plan and program have been solid, well thought-out work. The Council has demonstrated it can take complex, often conflicting information and process that information into generally sound plans of action.

I think the current regional energy plan is a generally well received document. That's the product of our business. The main things accomplished in the plan and program are the recognition of forecast uncertainty and that resources must be flexible to meet that uncertainty.

In just a year from now, the Council will have its fifth anniversary. What would you like to be able to tell Congress then?

I would like to tell Congress it has every reason to believe that fish runs are improving and that the region is building the cheapest resources first and only the resources it needs. I hope to be able to report that conservation development outside the residential sector is alive and well. I'm unable to make that statement now.

Almost from its inception, the Council has been the subject of debate over how much actual authority it has. How would you define that authority and what do you see as the Council's major role?

The Council will not have a long-term influence if that influence is attempted coercively or arbitrarily or dictated. The Council will raise issues. It will offer opinions and ideas. This is the important role for the Council — to plan.

On the fish side, there are control mechanisms in the law, and the Council will have to employ them if they are required.

I have always liked the distinction Dan Evans made between authority and power. The Council's power will flow from the quality of thinking and the clarity with which it is communicated. If that quality is poor, the Council will play no role. The Council's healthy role is to raise issues and make recommendations.

It's healthy that we have already had complaints on raising the DSI issue and it's refreshing that some of those complaints have turned into compliments.

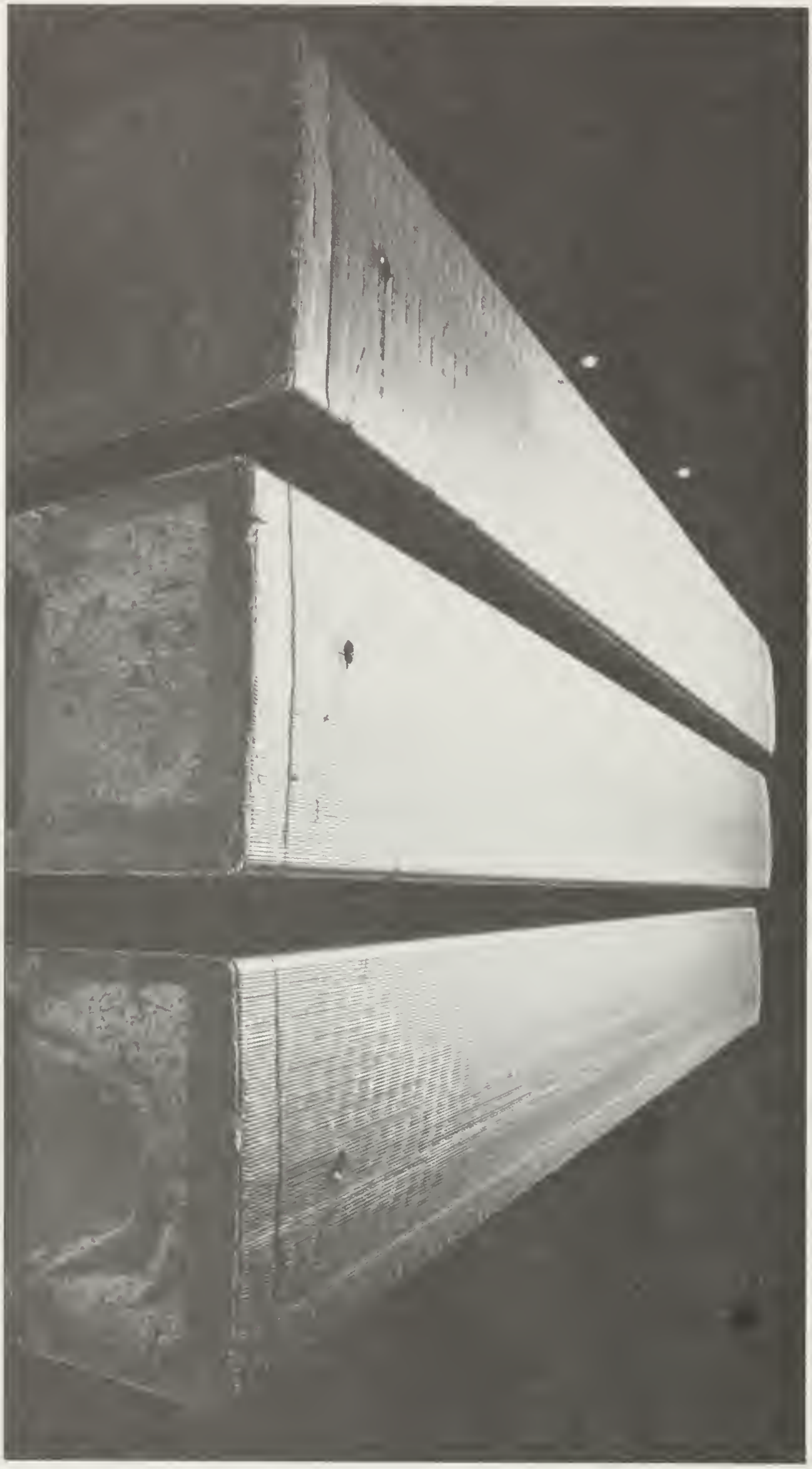
The Council has absolutely no ability nor desire to dictate terms or conditions of increased DSI interruptibility. At the same time we think the idea is worth exploring. But we can't make it happen. It will only happen, number one, if the analysis is correct and significant increased benefits are available, and number two, if all the parties can agree on a way to divide the benefits.

A policy-making body will not flourish if it relies on written authority to make things happen. It must develop the kind of policy that is so logical, makes such good sense, that other parties participate voluntarily. It must have the kind of processes that involve others at every level so that the policy becomes, not the Council's policy, but the region's policy. Obviously, we still have much to learn about how to be effective.

Where we've run into conflict is over the fact that our viewpoint is regional. By law, we must set the kind of policy that is most beneficial for the region as a whole. This is not always the most favorable policy for an individual utility in the short term. The long term, however, is another story. I believe that all parties will benefit in the long term from setting a course that goes beyond their individual and immediate interests, and takes the future good of the region into account. And — more than anything else — it is that kind of thinking the Council is trying to be a catalyst for. I hope it succeeds. ■

INDUSTRY IN CRISIS

NORTHWEST ALUMINUM COMPANIES



Jim Nordquist wraps his hand around the big throttle switch at the west end of Potline 2. It is December 21, 1984, in Martin Marietta's aluminum smelter at The Dalles, Oregon. Nordquist pulls the switch to shutoff position.

In the half-mile long shed, nothing special seems to happen. There is no thud you can feel in your feet, no surge of brightness from the overhead bank of lights. No vast roar or whisper vanishes from the air. Smelting aluminum is a quiet process. Stopping the process barely catches a person's notice.

But out along the line a few probe rods and rakes fall off the metal bumpers and clang to the concrete floor. The 80 megawatt per hour electric load has departed, taking with it the magnetism upon which workers relied to hang their tools.

For the first time in nearly 30 years the current has gone out of the core of one of the region's most efficient smelters. If the current to the potline had cut out unexpectedly, the molten contents, bubbling gently at 960 degrees centigrade, would drop a calamitous 30 degrees within two hours. Restarting this line would then cost a million dollars and require four weeks to jackhammer out the frozen metal. This shutdown, however, is planned, phased, controlled — and final. The liquid aluminum has been tapped from the pots so it won't damage them. Martin Marietta, which has shopped the plant around and failed to find a qualified buyer, says it will not resume operation here in The Dalles.

The plant, the smallest of ten in the region, will no longer employ 220 men and women — a work force already down from

by Steve Engel

500 a year ago. It will no longer pay $15 million per year to the Bonneville Power Administration for electricity. It will no longer produce 45,000 tons of aluminum ingot per year at a cost of 55 cents a pound — ingot that sells for only 50 cents a pound on the tumbling world market.

Brett Wilcox, director of the Direct Service Industries (DSI) Association (composed mostly of aluminum plants), is not happy, but he sounds grimly satisfied when he says, "Maybe now that people see a real corpse, they'll finally believe the electric rates are killing the Northwest aluminum industry."

There are people who say that a wretched world market is killing this region's aluminum reduction plants. There are those who add up high labor and transportation costs to find the culprit, and others who argue that countries abroad have brewed a fatal mix of capital, labor and energy subsidies to create overwhelmingly cheap competition for U.S. smelters. But whatever is killing domestic aluminum — if indeed it is dying — some say the falling bodies may crush several Northwest communities, damage the region's economy, and gouge a nasty hole in Bonneville's finances. There are also those who feel certain efforts to keep the industry alive could impose damages of their own.

But leaving the volatile situation the way it is has already proved plenty expensive. The region got a taste of life without aluminum customers when the industry weathered the 1983 recession by shutting down up to 1,500 megawatts of capacity. This drop represented 16 percent of Bonneville's total load and the cost to Bonneville was $200 million in lost revenues — almost one-eighth of its income that year.

The ups and downs of aluminum industry electric load defy prediction. Edward Sheets, executive director of the Northwest Power Planning Council, emphasizes that "This kind of unpredictability places great risks and potentially great costs on the power system. We face the problem of planning new, expensive resources to meet a contractual demand that may fluctuate a great deal in the short term and could be very uncertain in the long term. And yet we must meet our obligation to plan for the aluminum company contracts."

Says Sheets, "The region has already had a very expensive lesson regarding planning and building resources for loads that turn out not to be there. That kind of situation raises power rates for everyone."

A number of events created the rate increases that aluminum companies say are threatening their survival. Today, Bonneville's aluminum customers pay 750 percent more for their electricity than they did seven years ago — .3 cents per kilowatt hour then and 2.3 cents under current incentive rates (2.65 cents without the incentives). But, in fact, the aluminum companies sought and supported the instrument which permitted those higher rates — the Northwest Power Act of 1980.

At the time the Act was wading through Congress, contracts were about to expire for the aluminum companies and other direct service industries. (DSIs are industries whose operations use so much electricity that they buy power directly from Bonneville. More than 95 percent of the DSI load goes to aluminum companies.) The aluminum companies helped break the legislative logjam surrounding the Act when they agreed to pay, until 1985, most of the cost of equalizing wholesale rates to public and private utilities.

This exchange rate provision, according to the DSIs, has cost them $550 million over the last four years. In return, they received guaranteed power.

But this plan hit a snag. In a rocky economy, and with a booming oversupply of cheap foreign ingot, aluminum prices fell far more sharply than anyone would have predicted. At the same time, Northwest electricity prices soared far higher — in part due to the costly WPPSS nuclear power plants, in part because loads didn't grow as quickly as forecast and because a new surplus defied Bonneville's marketing efforts.

Recently the aluminum companies decided they were paying too much. They made a series of successful rate and cost methodology appeals to Bonneville, gaining a variety of reductions — and raising howls of protest from several utilities and their customer groups. These parties object to paying those system costs from which the DSIs are being released.

Now Bonneville has proposed an 8 percent rate reduction for the DSIs, along with a 3 percent increase for the utilities. Bonneville is also studying other methods for rate relief, including *indexing*, which would peg the cost of electricity to the world price of raw aluminum; support for plant efficiency and *conservation* improvements; permitting DSIs to purchase cheap *out-of-region power*, such as that from British Columbia; and, in an idea raised by the Northwest Power Planning Council, converting DSI firm loads to cheaper *interruptible* electricity (see accompanying story).

There is a cost to the regional power system if the aluminum companies fail — as well as a price for keeping them alive. What are Bonneville and its customers willing to pay? And what can they reasonably expect to get in return? These questions are receiving a great deal of attention around the Northwest region right now.

According to aluminum industry spokesmen, only steep rate cuts can save the region's 10,500 aluminum industry jobs, save the $300 million in wages and salaries, the $28 million in state and local taxes, the $450 million in revenues paid to Bonneville, the $409 million worth of freight and materials purchases — in all, the total $1.3 billion impact in additional jobs and dollars pumped into the region's economy during 1983.

Wilcox says, "The question no longer is

Direct Service Industries, Inc. photos

what should be done, but how much."

But Robert McCullough says, "The question is, who pays for the break."

McCullough, an economist for Portland General Electric, agrees that the aluminum companies are in trouble. "Of course they are," he says. "And most probably another rate break would help them. But the rest of the system shouldn't be subsidizing the DSIs."

"The DSIs are holding onto jobs at the expense of other sectors," says Kevin O'Meara of the Public Power Council. "Thousands of people around the region won't get hired, or will have to be laid off, because potential employers won't have the money — they'll be paying it for electricity. And the buying public will have less disposable cash to make the purchases that create jobs."

Aluminum industry spokesmen argue that the jobs they provide pay so well — around $15 an hour — that it would take three or four lower-paying high-tech jobs to replace the tax-paying and purchasing power of a single reduction plant worker. And that many high-tech jobs simply aren't clamoring to enter the region, insist these spokesmen. Opponents of the DSI rate break turn that argument around. They say that a lot of electricity produces very few jobs in the energy-intensive aluminum industry, and that the same power could support far more employment and economic development.

In any case, contends Chip Greening, former director of the Public Power Council, "I don't think anyone is qualified to decide which industries should live and which ones ought to die. And that's what this subsidy decides."

"It isn't a subsidy if it's in everybody's best interests," Wilcox insists. If Northwest aluminum goes belly up, he argues, the cost will fall suddenly and hard on all the remaining customers. Wilcox points out that, even with a major cutback in operations, the DSIs paid a third of Bonneville's revenues in 1983, while drawing one fourth of its power. In a time of surplus, without other customers for that power and with fixed costs to meet, Bonneville would be forced to replace the DSI revenues by boosting rates.

"It would cost people a lot more to get us out of the region than to keep us here," Wilcox says.

Dave Piper, director of Pacific Northwest Generating Companies, agrees. "Sure it's a subsidy," he says. "If you're getting power at less than cost, it's a subsidy. But we all have that. This happens to be a subsidy that makes sense to me."

But will cuts in their electric bills really

> "It would cost people a lot more to get us out of the region than to keep us here."

Photos: Direct Service Industries, Inc. & Doug Wilson save the smelters? Many observers insist that only a higher world aluminum price can do that.

ARCO's Jack Mayson agrees on this point. Mayson says, "You could give electricity to us for free and there'd be no profit in making aluminum right now. But the prices [of aluminum] have got to move back up, and then the electricity can make a big difference."

Joe Moffatt of Reynolds Metals, which runs smelters in Troutdale, Oregon and Longview, Washington, calls electric rates "the final determining factor" in corporate decisions to continue operating, and to invest in improvement or expansions.

According to an October 1984 report from CRU Associates, commissioned by the aluminum industry, a drop in rates could almost quadruple the survival chances of Northwest plants. The study concludes that, when world aluminum prices fall as badly as they have this year, Northwest smelters are more at risk of shutdowns than smelters in other parts of the free world. Recent aluminum prices peril production at 20 percent of the free world's smelters — and 55 percent of the Northwest plants.

CRU calculates that a rate reduction to 20 mills per kilowatt hour would bring all but 15 percent of the region's capacity into the safety zone. What's more, the study asserts, a permanent reduction in power rates would make it much more likely that the industry would modernize its plants in the Northwest, thereby improving their competitive position.

Right now, Northwest aluminum production and employment are down 15 percent below capacity — more at some plants. According to Moffatt, the region's plants continued to operate full bore during the 1974 recession, in spite of poor aluminum prices, because electric rates were an eighth of today's. (According to Bonneville data, however, the plants cut their loads significantly in 1971, 1972 and 1975.) Moffatt also claims that "The big Alcoa and Reynolds reduction plants in Massina, New York, haven't lost a pot or a person" during this feeble market, because the aluminum industry's electric rates there are about a third of this region's.

Meanwhile, several reduction plants have folded in the Gulf Coast states, citing excessive electricity costs. And here at home, Kaiser recently shelved a $400 million modernization project in Washington, Alumax dropped plans to build a new plant near Hermiston, Oregon, and ARCO is getting out of the business in Columbia Falls, Montana.

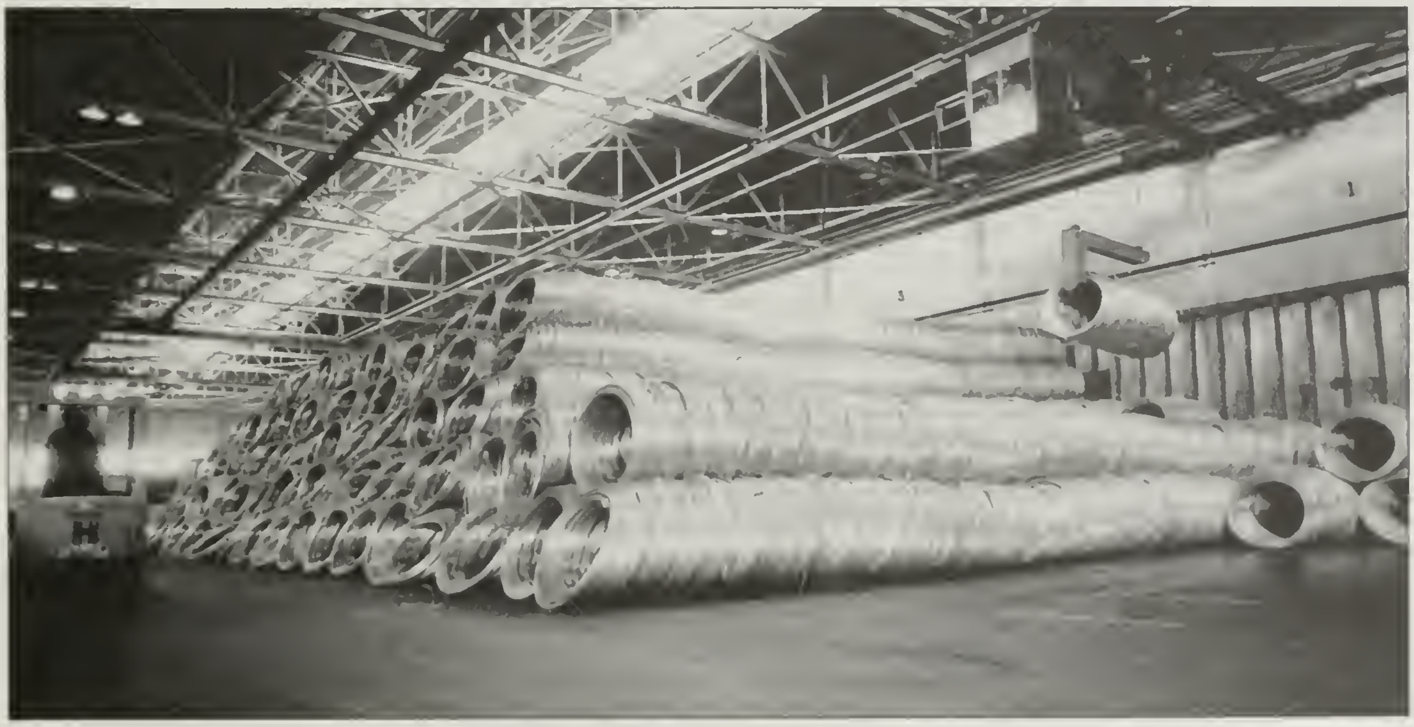
Jack Mayson says, "ARCO does not believe that making aluminum is a divine mission. Gas and oil are a divine mission for ARCO, but aluminum has turned out to be a fair amount of trouble for what it pays. They're determined to let it go."

And therein may lie the difference between the fates of Northwest smelters — Martin Marietta and ARCO are not aluminum companies. They do not boast an integrated system of rolling mills, refineries, reclamation and fabricating plants. They do not own a host of other plants over which they can spread the risk of local losses. For despite the losing price on raw ingot, there's a profit in sheet aluminum and manufactured aluminum products. Right now, Reynolds, Alcoa or Intalco might lose a nickel a pound if they sold their 25,000 pound ingots on the commodity market; but they don't. They ship the huge blocks to their own in-house fabricators. And those fabricators turn out items that make money.

It's tempting to say a complete aluminum company can outlast a downcycle that will kill off a more narrow operation.

But local plants even compete to survive within their own companies. Intalco's Ferndale, Washington plant is widely recognized as producing the lowest-cost aluminum in the Northwest, "But that can be illusory," says Bruce Mizer of Intalco. "The problem is, we're the oldest of Alumax's four plants and the most expensive to run. When there's too much aluminum, the parent company is going to shut down the operation that costs the most money. Northwest electricity rates can spell that difference."

Mizer says the world average cost for electricity is dropping because plants that pay the high-end prices are vanishing. "And as the world average drops," he points out, "Pacific Northwest plants will look more and more costly." ■



INDUSTRY IN CRISIS

by Steve Engel

EXPLORING SOLUTIONS

Doug Wilson photo

Amid all the "doom and gloom" headlines about the crisis in the Northwest aluminum industry, some proposed solutions are beginning to draw attention.

The Northwest Power Planning Council has called for public discussion of an idea that could help the aluminum companies weather the current rough spell, but would also return immediate and continuing benefits to the region. This idea involves the aluminum companies and other direct service industries (DSIs) voluntarily changing a greater part of their energy contracts from firm (guaranteed) power to power on an interruptible basis.

If all the aluminum companies in the region ceased operations today, they would stop using 2,700 megawatts of guaranteed ("firm") power and 900 megawatts of interruptible power. One fourth of every DSI contract is interruptible — which means that, if Bonneville needs the electricity to meet its priority firm contracts, it can call on that power. Such a need might arise during a power system mishap, or during the summer or fall of a low-water year.

Under the interruptibility concept, the DSIs would act as a large storage battery for the region, thus saving the region the need to build expensive new generating resources for reserves. Because the amount of reserves would be known (the amount of the DSIs' interruptible power), long-term planning would be easier.

With the recent energy surplus, the DSIs have enjoyed largely uninterrupted use of their energy contracts — including the interruptible portion. But because of the risk to them and the benefit to the region, they pay less for the interruptible power than for the firm power. They also enjoy reductions in cost because Bonneville can impose some restrictions on use of their other three quarters of power.

The Council's staff recently assessed the value to this region of converting an additional fourth of the total DSI load to interruptible status. While some revenues would be lost due to the lower rate, eliminating the need for new power plants would more than offset those losses. A net savings of between $1 billion and $2 billion could accrue to the system over the next 45 years if it acquires another full quartile (900 megawatts) of the total 3,600 megawatt DSI load. The amount of savings depends on actual demand for energy, systemwide.

For each 100 megawatts of new interruptibility, the system would net $117 million, using the Council's medium range load forecasts.

Right now, the aluminum industry's volatile load levels introduce the potential for expensive errors into the region's long-term resource planning. The unpredictability of aluminum operations would present far less of a problem under increased interruptibility, according to a Council staff paper. The region could enjoy a market for its unstorable energy, without having to invest in firm energy. Stable revenues would further benefit the system, and stable rates are expected to help the DSIs.

If Bonneville gives each DSI a 9 mill (.9 cent) break per kilowatt hour on two additional interruptible quartiles of electricity, the overall electric bill for each plant would average out at close to 20 mills. Aluminum industry personnel assert, and a recent CRU Associates study reasons, that this level would keep the plants operating.

"The staff selected 9 mills for the analysis based on the world average price aluminum companies pay for electricity," according to Edward Sheets, the Council's executive director. "Obviously, the actual rate would be decided through voluntary negotiation between an aluminum company and Bonneville."

If a few plants accept such a contract, the other ones might well sign on to stay competitive. This outcome would increase potential savings to the region.

Bonneville itself was one of the first agencies to respond to the Council's discussion on interruptibility. Calling it an "interesting option for dealing with the DSI load uncertainties," Edward Sienkiewicz, assistant administrator for power and resources management, says Bonneville is looking at a number of options to help the DSIs. Among them are a long-term variable rate tied to the price of aluminum ingots, allowing DSIs to be served by other power carriers, and providing "substantial" financial support for conservation investments in DSI plants. These options will be explored in a "DSI options study" which began this month and is due out in draft form in April, when it will be available for public comment.

The Council welcomes the Bonneville study, according to Sheets, who says, "Our goal was to raise the issue so that the region could address it. We believe that any policy on the DSIs should meet certain criteria. It should meet the test of reducing planning uncertainty, reducing system costs, providing revenue stability, and offering timely implementation. To be workable, it should also address the effects on aluminum company employees and the communities around these plants."

The Council adopted a policy statement to that effect at its January 9 meeting in Portland, Oregon.

Some companies have already proposed variations on the Council's theme. Somebody would be far likelier to buy and run ARCO's plant in Columbia Falls, Montana, according to its energy manager, Jack Mayson, if its power were far cheaper. ARCO would like Bonneville to convert all four quartiles of the plant's energy to interruptible status, and charge the plant the lower rate. This proposal alone could, in theory, save Bonneville and its ratepayers half a billion dollars — the cost of building a new 350 megawatt coal plant to serve the ARCO contract, minus the $450 million revenue reduction over time.

Kaiser Aluminum has approached the Council with a proposal to combine interruptibility with incentives for industry conservation. The incentives would be similar to "billing credits," which Bonneville grants to utilities. In such cases, Bonneville credits to a utility's bills an amount comparable to what the utility "buys" in conservation. The savings accrue to Bonneville because the agency does not have to develop resources to meet that part of the load saved through conservation.

"The idea of increasing the interruptibility of the DSIs appears to have some real advantages," says Sheets. "Our analysis shows that the power system can save a lot of money, the DSIs should be more competitive, and it would reduce the planning uncertainty and the revenue instability associated with what is currently a very volatile load."

But different interests see different problems with interruptibility. "I'm not convinced that there's power available under more interruptibility," says Intalco's Bruce Mizer. "I'm not convinced there's a long term economic operation. More interruptibility may be a euphemism for giving up a portion of load."

Mizer admits that if other companies enjoy a benefit from such contracts, "We may be forced to take it." But he questions the wisdom of agreeing to a plan that might deprive the smelters of power "just when world prices begin to soar."

Marc Sullivan, executive director of the Northwest Conservation Act Coalition, believes Mizer might have a point. Sullivan says the second quartile would likely be shut down in one out of every six years, for at least a few weeks. Wallace Gibson, system analysis manager for the Northwest Power Planning Council, suspects that "If you exclude the possibility of outside region power purchases to keep the DSIs going, then the loss of service will be much more frequent" than Sullivan supposes.

Smelters don't switch on and off so easily, however. To overcome losses incurred during shutdowns, it's been suggested that the companies stockpile ingots — but industry sources claim stockpiling inventory is a money-losing move.

ARCO's Mayson suggests that interruptibility would work all right even if shutdowns threatened. "Let the companies make a decision at that point, based on the world price of aluminum and the cost of hooking up temporarily to more expensive power. If it pays to import more costly energy for a short time, they'll do it."

Sullivan believes "there is a more than 50 percent probability" the aluminum industries will soon depart the region anyway, and that interruptibility may be "a more aggressive managerial approach by which we could shape the date on which that happens." He is not alone in perceiving that interruptibility is attractive chiefly as a way to minimize losses for all parties if aluminum is indeed phasing out of the region.

Nonetheless, says Brett Wilcox, director of the Direct Service Industries, Inc., "A short term future is better than no future at all." Wilcox concurs that greater interruptibility may benefit the region, but he ties his endorsement to what he considers a "fair base rate."

"I'm very leery of interruptibility," says Merrill Schultz, head of the Intercompany Pool, an association of privately held utilities. "Our experience of interruptibility is that the DSIs brag about the service they're performing when they don't have to surrender the power. Then when it's about to be interrupted, they go to the governors, senators, anybody they can find, saying 'How can you lay off all these people?' "

Schultz says he favors the indexing plan put forward by some analysts. "We think the appropriate thing is to have a standard rate and then depart from it — going higher or lower, depending on the world price of aluminum." But Schultz says, "We want to determine the proper rate objectively and then discount it. If they need a lower rate, tell us how it was arrived at, why it was needed."

Portland General Electric's Robert McCullough echoes this request for openness. "I believe them when they say they're sick," he observes of the DSIs, "but I find it very frustrating when they refuse to show us the figures that would persuade us just exactly *how* sick."

McCullough also complains that "the aluminum industry has shown great willingness and complete success in seeking political salvation from its contracts. If you had some way to guarantee that the DSIs would keep the agreements they've made, then I could live with a new rate."

Planning Council chairman Chuck Collins agrees that "if any new rate structure is going to work, the DSIs will have to convince a lot of people that they won't look for ways to escape their agreements. There will have to be some ironclad terms." ■

Dudley, Hardin & Yang, Inc photo

Range of Northwest chinook salmon. Some strocks migrate as far north as Alaska. The new treaty, if ratified, will help ensure coordinated coastwide management.

U.S.-Canada Treaty

New hope for Pacific Salmon

by Jody Lawrence

For nearly 20 years the United State and Canada have been trying to negotiate a treaty to resolve the problems posed by the salmon's peripatetic lifestyle.

At stake are not only the fishery interests of four states, more than 23 Indian tribes and two nations, but also the very survival of the resource itself.

In December, after intensive bargaining, preceded by nearly 20 years of discussion, negotiators for the two countries reached agreement. At the heart of the agreement is a management structure that allows biologists and managers to coordinate fishing regulations throughout the range of the Pacific Coast salmon.

According to Bill Wilkerson, director of the Washington Department of Fisheries, "We couldn't make sense out of management if we didn't get our act together and negotiate a treaty." The reason is that Pacific salmon, originating in hundreds of streams and tributaries from the Columbia to Alaska, migrate great distances in the ocean, crossing state and national borders and a multitude of management jurisdictions.

As a result, conservation measures taken by U.S. managers could be undermined by the harvest allowed by the Canadians and vice versa. With the treaty, long-term fishing and conservation objectives can be agreed to and regulation and enhancement measures coordinated.

"In the short term," Wilkerson said, "the treaty won't mean tremendous increases in runs, but over the long term, we are going to see large increases in returns of chinook and coho."

The Northwest Power Planning Council has supported the negotiation of a treaty with Canada because it believes the treaty is essential to the development of a cost-effective program for restoring salmon to the Columbia River. The treaty will also help ensure a Council priority — that electric ratepayer investment in this restoration project is protected.

Without the treaty, there is no formal way to guarantee enough fish return to the Columbia River Basin to spawn. Without adequate numbers of fish returning to spawn, the Bonneville Power Administration and other investments in habitat and passage improvements and efforts to rebuild declining runs of natural stocks would be frustrated.

The treaty could help give ratepayers in the Columbia River a voice in the management of chinook throughout its migration range. This will help ensure that the substantial investment being made by ratepayers as part of the Council's fish and wildlife program will produce more fish in the basin.

As shown in the pie chart, in the past more than 50 percent of upriver bright fall chinook were caught by Canadian fishermen, about 30 percent were caught by Alaskans and only about 10 percent were caught in Columbia River sport and net fisheries. Large percentages of summer chinook have also been caught in the North Pacific.

This year, increased production of upriver bright fall chinook has alleviated the immediate conservation crisis for brights, and returns to the Columbia River have improved. But returns of summer chinook, once one of the central components of the Columbia River chinook population, remain very low. The escapement* goal of 85,000 spawners for summer chinook has not been reached since 1969. Last year escapement was only 18,000; this year only 24,000.

The treaty with Canada will help protect these and other endangered Pacific salmon stocks by ensuring international management of stocks that swim through waters of both nations. A Pacific Salmon Commission with equal U.S. and Canadian membership will make recommendations to both nations on the conduct of fisheries.

The Commission will be assisted by three international panels, each responsible for different geographic areas. These panels will review management and enhancement measures in their areas and make recommendations to the commission.

Negotiators for both nations have agreed that the principles underlying the treaty should be to:

(1) prevent overfishing and provide for optimum production; and,

(2) provide for each nation to receive benefits equivalent to the production of salmon originating in its waters.

It is the second principle, the issue of international "equity," that proved the biggest hurdle for negotiators. A number of different fisheries and concerns had to be folded into the equation, not all of them related to the Columbia River Basin (see box on next page).

In 1982 a treaty agreement on these basic policies was successfully negotiated and signed, but was never forwarded from the State Department to the U.S. Senate for ratification. Some believed that the treaty annexes, which outlined specific measures to be taken with regard to the different fisheries, unduly punished their fishing industries.

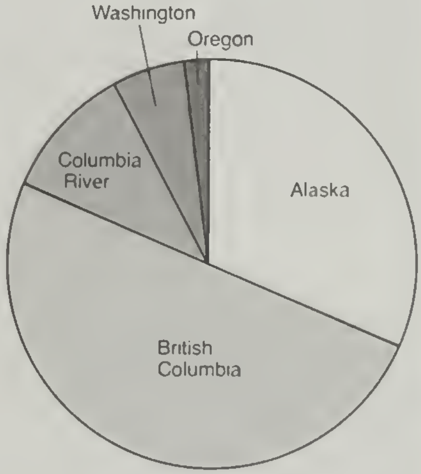
Those that supported the treaty did not have a strong enough voice in Washington to see it through to the Senate.

This year, however, supporters of a U.S./Canada treaty believe the treaty will be ratified. A major reason is an unprecedented spirit of cooperation that has developed among Indian and non-Indian fishermen who are committed to saving the declining runs of chinook salmon.

Mark Cedergreen, past president of the Westport Charter Boat Association, and Phil Anderson, current president, got the momentum going by establishing the Pacific Salmon Treaty Coalition.

The coalition brings together traditionally disparate groups such as charter boat operators, sportfishermen, Indian tribes, trollers and environmentalists. According to Cedergreen, current chair of the coalition, "When politicians see warring factions coming together they get

Distribution of catch of upriver bright fall chinook, a stock that is central to the Council's Fish and Wildlife Program.



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*Escapement refers to number of fish that return from the ocean to spawn in rivers. The escapement goal for the Columbia River is set by a compact of Oregon, Idaho and Washington fisheries agencies.

worried — they pay attention." And it appears that's what's happening this year.

For the first time in the history of the negotiations, high level State Department players cast a watchful eye on the negotiations. Ed Derwinski, at a recent Seattle conference on the treaty, wryly likened the negotiations to the "slightly less complicated arms control negotiations." A longtime Illinois Congressman, Derwinski is now chief counselor to Secretary of State George Shultz. According to Derwinski, a salmon treaty is a top priority of both governments.

Support has also been strong from Senators Dan Evans and Slade Gorton in Washington and Senators Bob Packwood and Mark Hatfield in Oregon.

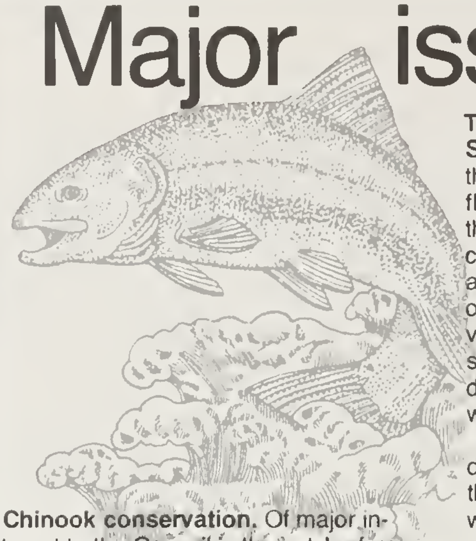
According to Cedergreen, one of the best accomplishments of the coalition has been "to keep the issues in the public eye and to put the whole thing into national perspective."

Intensive work on the negotiations began in November when Ted Kronmiller, the U.S. negotiator, convened the U.S. delegation for intensive intra-delegation negotiations. One participant noted that there may have been more disputes between the southern U.S. delegation and Alaska than there were between the U.S. and Canada. But this is the first year that a comprehensive U.S. position has thoughtfully (albeit sometimes acrimoniously) been hammered out *before* the negotiations began. According to Timothy Wapato of the Columbia River Inter-Tribal Fish Commission, "the key was to get *everyone* to negotiate. And that means *everyone* giving a little on something."

The major issues have been resolved and the final drafting of the treaty and its annexes is going on now. During the same session, the U.S. delegation will begin to draft the implementation legislation that describes how appointments to the commission and panels will be made and how they will be funded. Beyond that, the treaty itself must be ratified by the U.S. Senate. Supporters are hopeful that all these tasks can be completed by March.

"It may be the most important environmental issue that faces the West Coast right now," Bill Wilkerson told a highly charged group of fishermen, Indians and environmentalists. None who watched the animated crowd or followed the ensuing events would disagree. ■

Major issues



Sharon Torvik illustration

Chinook conservation. Of major interest to the Council is the catch of upriver Columbia River salmon in the S.E. Alaskan and Northern British Columbian fisheries. Other U.S. chinook stocks are also caught off the west coast of Vancouver Island and in the Johnstone Strait.

The new treaty would set limits on catches in these areas and rebuild depressed indicator stocks by 1998. Catches of chinook off S.E. Alaska and British Columbia would be reduced from about 290,000 in 1984 to 263,000 in 1985 and 1986. The catch off the west coast of Vancouver Island would be reduced from 503,000 in 1984 to 360,000 in 1985 and 1986, and the catch in the Georgia Strait would be reduced from 541,000 to 275,000.

Fraser River sockeye and pink catch. According to a 1930 international convention between the U.S. and Canada, U.S. fishermen are allocated 50 percent of the Fraser River sockeye catch in convention waters. In actuality U.S. fishermen caught an average of 41 percent of the total catch within and outside convention waters between 1952 and 1977 and an annual average of 24 percent between 1978 and 1983.

Because the Fraser River is located entirely within Canada, the Canadians wanted to see an increased portion of the benefits of Canadian sockeye and pink salmon returned to Canadian fishermen.

U.S. fishermen, dependent on these stocks for a viable fishery, wanted to be assured of a stable catch.

The new treaty would set new limits on the total allowable U.S. catch of Fraser River sockeye and pink salmon that is equivalent to between 26 and 30 percent of the total catch.

Transboundary rivers — the Taku, Stikine, and Alsek. Most of these three rivers are in Canada, but they flow through the Alaska Panhandle to the ocean. The Alaskans have long conducted major fisheries on sockeye and pinks from these rivers in the ocean. Canada has recently been developing an inriver fishery on these stocks and wanted the Alaskans to reduce their ocean fishery so more fish would return to the river to spawn.

The new treaty would set the Canadian catch of sockeye to 35 percent of the total allowable catch or 10,000 fish, whichever is greater, on the Stikine and 15 percent on the Taku River. The Alsek was put on conservation status and no harvest was designated. The parties would also consider joint enhancement activities.

Boundary areas. In the area of the southern boundary between the Alaska Panhandle and Canada, the U.S. and Canada have major ocean fisheries. Stocks from most of the Pacific Coast contribute to the fishery but little is known about the comparative contribution of stocks from different rivers. Major concerns included how to apportion the fisheries and how to set regulations so that harvest of the abundant pinks in the area do not result in excessive harvest of other stocks such as coho and sockeye.

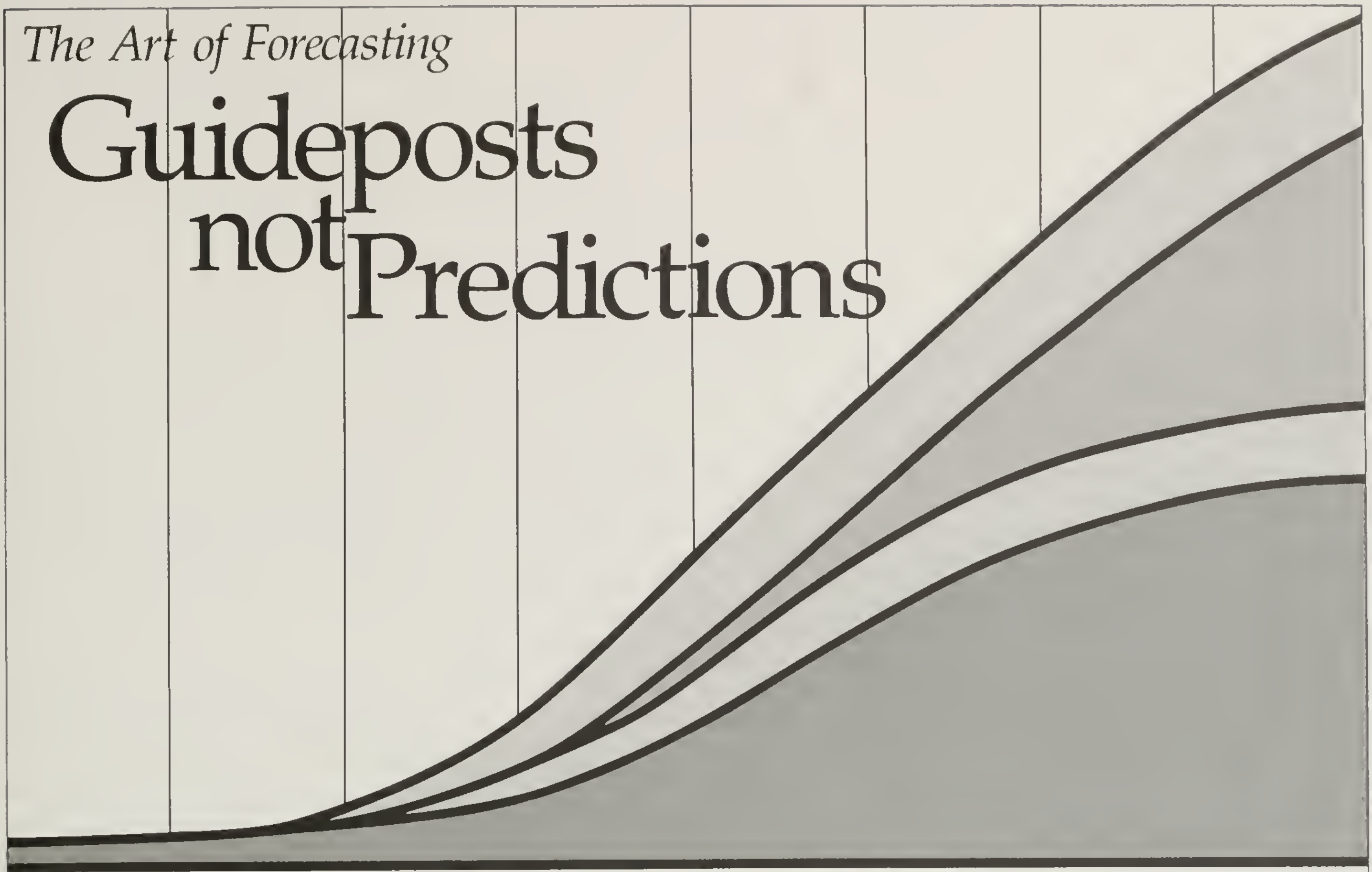
The new treaty calls for limits on the U.S. catch of sockeye and the Canadian catch of pinks. In addition, the negotiators have agreed to continue northern pink salmon tagging to better define interceptions.

Southern coho and chum. Some coho and chum stocks around Puget Sound and natural stocks in coastal rivers in British Columbia and Washington are experiencing serious declines. During the past two years Canadian coho harvest off the west coast of Vancouver Island was considerably higher than in the past. Some 85 to 90 percent of the coho the Canadians harvested in this area spawn in U.S. waters.

The new treaty would limit the Canadian catch of coho to 1.75 million in 1985 and 1986. A joint technical committee would review the status of chum stocks and make recommendations for 1985 regulations. ■

The Art of Forecasting

Guideposts not Predictions



by Dulcy Mahar

> "The future is called 'perhaps,' which is the only possible thing to call the future."
>
> Tennessee Williams
> *Orpheus Descending*

It's not really a forecast in the traditional sense. Instead of predicting the future — as most forecasts attempt — the Northwest Power Planning Council's "forecast" is an admission that the future cannot be predicted. At the time the Council developed its first forecast, that was a revolutionary concept. Now, as the Council begins a new 20-year forecast for its 1985 power plan, the concept of planning on the basis that the future is uncertain is so widely accepted that it is something of a cliche.

"The Council became the first energy planners to state explicitly that the future was characterized far more by uncertainty than by certainty," according to Oregon Council member Roy Hemmingway.

"The task of power planning was not to refine further the tools for forecasting what the future would look like, but instead to devise tools for dealing explicitly with the inherent uncertainties in the region's future."

The traditional forecast is called a single-line forecast. Such a forecast projects a "best guess" of where energy demand will be at any exact point in time. It is normally displayed as a single line moving across a graph.

The range system, which the Council uses to forecast electrical energy demand in the Northwest for the next 20 years, is just the opposite. The forecasters literally refuse to guess and, instead, acknowledge the future is indeed uncertain — within a range. Planners then must develop a resource portfolio that can serve any eventuality within that range.

Under the range system, the forecasters project two boundaries. The probability that demand will fall outside these boundaries is extremely low. Within those two boundaries — high and low — the Council has projected a narrower band — medium high and medium low. The likelihood that demand will fall within this narrower range is highest.

When it developed this system, the Council was under some pressure to plan for the mid-point between the medium high and medium low range. "We should resist the recommendations to choose a middle ground," Washington Council member Chuck Collins said at the time. "To plan for the middle is to lose our planning concept." Thus, the Council's forecast is not a prediction of the future, but a guidepost to deal with that future.

How a forecast is developed

To develop a forecast for energy demand, the Council's power planning staff considers a variety of factors likely to affect that demand — the regional and national economy and their relationship, population growth, types and status of industries, per capita income, and fuel prices. Economic and demographic forecasts and fuel price forecasts are developed, and these in turn become the basis for the electrical energy demand forecast.

Many factors have a direct relationship on electrical demand. For example, in the absence of other changes, electrical demand should grow proportionately with economic growth. The influence of such factors is relatively easy to assess. Other factors work in more mysterious ways. One of the more difficult factors to assess is the effect price has on electrical demand.

A key word in forecasting is *assumption*. Based on their research, forecasters must make assumptions that the economy will go in certain directions, that population will grow at a certain rate, and that prices will have a certain effect. It would, however, be inaccurate to characterize these assumptions as mere "guesses." The term "educated guess" would be nearer the mark. The forecaster must collect, record, compare, and analyze masses of data.

The validity of the assumptions depends upon the quality of this research, as well as the ability to spot trends and detect changes. This quality and skill cannot be underestimated since even minor over- or underestimations in future power demand can cost the region and its ratepayers millions — and possibly billions — of dollars.

The assumptions are an integral part of the economic, demographic and fuel price forecasts. But on the actual demand forecast, there are not a lot of different assumptions, according to Terry Morlan, the Council's manager of demand forecasting. At this point, the computerized models and relationships convert the economic, demographic and fuel price assumptions into demand.

"We try to define uncertainty and the effects of various uncertainties on demand," Morlan said. "It is important to recognize that the future is uncertain, but it is our job to minimize the risks in that future."

Forecasting techniques

There are two major forecasting techniques: econometric and end use analysis. Both have their advantages and disadvantages. The Council uses a combination of both to take advantage of their strengths and minimize their weaknesses.

Econometric forecasting uses mathematical forms to express economic theories. This technique looks at such things as past statistical relationships among variables. For example, it assumes that price has a predictable effect on energy consumption, and it calls this relationship "price elasticity." Statistical analysis is used to set a numerical value to that elasticity. As an illustration, a price elasticity of −1 means that a one percent increase in the price of electricity will result in a one percent drop in demand — if nothing else changes. This means that future rate increases are an important component of a demand forecast.

In end use analysis, the actual uses of electricity are analyzed for possible change, rather than just the gross historical relationships. This technique shows the ways in which demand affects price — as opposed to just being correlations — and estimates potential impacts on that demand. Changes in price can cause changes in fuel choice, efficiency, and consumer behavior. The forecaster looks at how energy is used in a typical household or a typical business. For example, appliances are one end use. One change currently taking place is the transition to energy-efficient appliances. This has an impact on consumption. Thus, such things as codes or appliance efficiency standards are taken into account.

History of Northwest forecasting

For years, all the talk about forecasting future energy demand and planning resources to meet that demand seemed academic. The Northwest had and always would have an abundance of cheap electrical power. In a region blessed with great natural resources, hydroelectric power was the greatest — and surest — of those resources. And so the region believed.

But then came a series of political events and acts of nature ranging from the 1973 oil embargo, which made this nation conservation conscious, to the Northwest's 1977 unseasonably low snowpack. More than anything else, the oil embargo made the U.S. conscious of the fact that it could never again absolutely depend upon a fuel source.

> Council member Gerald Mueller once said looking at the past to predict the future is like driving using the rear view mirror only.

Prior to the 1980s, Northwest energy planning was largely a one-sided affair — planning to make sure the region had enough electrical power to meet its needs. The emphasis was on growth. The method was trending, that is, looking at what happened in the past to predict what would happen in the future. Montana Council member Gerald Mueller once likened this method to driving using the rear view mirror only.

Trending worked only so long as the conditions which affected energy consumption remained the same. Beginning in the 1960s, however, those conditions began to change dramatically. First, the region exhausted most of its major hydro development potential, which meant it had to move from an almost purely hydro system to a mixed system — hydro and thermal. Second, the costs and time for building thermal plants — particularly nuclear plants — were vastly underestimated. It turned out that it could take from 12 to 16 years to plan, site, and build a plant. This increased the risk in long-term planning.

Nor could the uncertainty of nature itself be discounted. The difference between average water conditions and critical (historical low) water conditions is approximately 3000 megawatts — the equivalent of four large nuclear plants.

As the Council began its original plan in 1981 a (then) novel concept took root. While a number of people contributed to and cultivated this concept, it was most eloquently articulated as "the path along the ridge," a term coined by Senator Dan Evans, who was then chairman of the Council.

The idea was that there were two sides to energy planning. One was the familiar deficit side in which enough resources had to be built to ensure adequate energy. But the other side of the ridge was equally important — the surplus side. Resources had to be planned so that the region did not overbuild — that is, add resources it did not need and for which it would have to pay a future bill.

The overplanning issue gained particular prominence in the 1980s because the region suddenly found itself with a surplus of power. But another phenomenon also occurred. Prior to the 80s, energy analysts believed that maintaining low rates translated into more and more power plants. They had been working in an era where the next unit of power cost less, and all of a sudden it reversed; the next unit of power cost more.

Today the uncertainties remain — how long the surplus, if it really is one, will last; what will happen to WPPSS nuclear plants 1 and 3, now in mothballs; what is the future of the aluminum companies in the region; what kind of arrangement will be made for out-of-region sales — to name a few. And so, the wisdom of planning for uncertainty remains too. While the new power plan will undoubtedly change many things in the first power plan, one philosophy — articulated in the plan itself — is likely to remain the same.

"As recent events have shown, there is a high cost in being wrong. The major challenge, therefore, is to reduce the probability and the consequences of being wrong." ■

New Forecast Trends

The Council's new draft 20-year economic and demographic forecast is generally similar to the forecast developed for the 1983 power plan. However, there are five significant changes. These include:

Lower fuel prices — A weak world oil market influences retail prices for oil and natural gas. Lower prices for alternative fuels should lower the demand for electricity.

Lower aluminum smelter operating rates — Low aluminum prices combined with high manufacturing costs have made it difficult for some smelters to operate at a profit. The present situation makes the aluminum companies, which use one-fifth of the region's electrical energy, a major planning uncertainty.

Lower forest products industry employment — A continuing poor housing market and loss of market share to competitors clouds the outlook for the region's forest products.

Increased importance of the non-manufacturing sector — Resource-based industries continue to decline in importance as employment in non-manufacturing companies increases. The service sector is the fastest growing category.

The Northwest population is getting older — The most significant new trend appears to be in demographics. For example, the population aged 45-54 is expected to increase 60 percent in the next 20 years, while the 20-29 age group will decline by 10 percent. The aging of the population is expected to affect consumption patterns and the labor force. ■

by Debbie Kitchin

HIGHLIGHTS OF COUNCIL BRIEF

by Bill Cook

On December 20, the Northwest Power Planning Council filed a brief with the U.S. Court of Appeals for the Ninth Circuit in response to a suit brought by the Seattle Master Builders Association. The suit charges that the Council has violated the Northwest Power Act and the U.S. Constitution. The Council's brief alleges that the Master Builders misstated the facts and misread the law.

The Master Builders will file a reply brief this month, and the court is expected to hear oral argument on the case this spring.

A number of agencies filed amicus curiae *(friend of the court) briefs on behalf of the Council. These statements, intended to assist the judgment of the court, came from the California Energy Commission; the City of Tacoma; the states of Oregon, Idaho, Washington, and Montana; the Northwest Conservation Act Coalition, and the National Governors' Association. The bulk of the Master Builders' suit centers on the Council's adoption of model conservation standards for the residential sector. The Council's position, as stated in the brief, can be summarized as follows:*

Copies of the Council's brief and the amicus briefs are available on request. See order form on back cover.

■ The Master Builders argue that the "cost-effectiveness" and "economic feasibility" tests must be applied to individual components of the standards such as walls and windows. The Council applied these tests to the standards *as a whole* because the Northwest Power Act clearly states the *standards* must be cost effective and economically feasible. The Act makes no mention of nor any reference to individual components.

■ The builders' arguments are based on factual misstatements. For example, they say the Council could have completed testing of individual components within the time set by statute for adoption of the plan. However, they use the wrong deadline. They refer to the date for implementation of the standards (January 1986). This is two-and-a-half years after the Council was mandated by Congress to adopt the standards as part of its regional power plan.

■ The builders claim they are asking the court to determine that the Council violated the Northwest Power Act, but instead they quarrel with the Council's factual determinations. Such determinations can be overturned only if they are found "arbitrary or capricious." The Council's decisions were made in a full and open public process and were based on the best information available.

■ The Council did not violate the Act by the method it used to determine the effectiveness of components used to develop the standards because the Act did not require or specify any particular method. The method the Council chose (a computer simulation using ASHRAE* heat loss coefficients) is widely respected and universally accepted in the scientific and engineering communities. Furthermore, the Council validated its computer simulations by comparison to actual energy use in real homes.

■ The Council maintains that the standards are cost effective for the region. Not only does no individual component exceed 4 cents per kilowatt-hour, but the average cost of all measures in the standards is only 2 cents a kilowatt-hour. This is half the cost of a marginal resource such as a coal plant that would replace the standards. A coal plant was used to establish the cost-effectiveness limit because it is the most likely, similarly reliable and available alternative energy resource.

The builders also claim that the Council's own forecasts show that there is little likelihood that the region will need energy at the cost the Council contends is cost effective. But they ignore or overlook the fact that those forecasts were drawn up to *include* the availability of energy saved by the standards. This reasoning resembles that of a patient who has just had surgery and concludes he has no need of surgery — but the reason he has no need is because the surgery has just removed that need. Furthermore, the Council's plan does not ignore resources cheaper than the standards, but rather includes all resources the Council determined were cost effective, reliable, and available.

■ The Council maintains the standards are also economically feasible for consumers. Applying the economic feasibility test to the standards as a whole, the average homeowner is better off economically in a home built to the standards. Because the standards will create a benefit rather than a burden for homeowners, there is no need under the Act for financial assistance to render the standards economically feasible. Also, although the builders attempt to substitute their own economic feasibility determination for the one developed by the Council after public review and comment, they err by basing their calculations on inappropriate rate projections.

■ The Council violated no state environmental laws as alleged by the builders. Not only did the builders fail to file any necessary complaint to that effect, but the Washington law they cite applies only to state agencies — not to an interstate compact such as the Council. In any event, the Council's plan is a document equivalent to an environmental impact statement.

■ The Council's creation does not violate the Appointments Clause of the U.S. Constitution, which restricts who can appoint "officers of the United States." The purpose of the Appointments Clause is to prevent undue concentration of both appointing and legislating powers in a single branch of the federal government. There is no violation of this principle when Congress authorizes certain state governors to appoint officials to oversee programs which deeply affect their particular states.

Furthermore, the Council members are not "officers of the United States" who warrant appointment by a federal executive; they are officers of an interstate compact agency. To call Council members federal officers because they exercise authority over a federal agency or programs would be the same as requiring school boards or school officials to be federally appointed because they administer federal funds and programs within their states. The Council represents an important example of federalism and allows the states directly affected by a regional federal agency, whose funds come from regional ratepayers, to have a significant voice in that agency's decisions.

■ Although the builders object to the "rare" and "novel" manner of the Council's creation, they present no reason why this violates the provisions of the Compact Clause of the U.S. Constitution. The Constitution sets no barrier to Congress breaking with tradition by taking the initiative to authorize and define the scope of an interstate compact rather than waiting for the states to approach it with such a proposal. ■

**American Society of Heating, Refrigeration and Air-conditioning Engineers*

STREAMSIDE STEWARDS

WORKING TO IMPROVE FISH HABITATS

by Carlotta Collette

Sometimes in the winter, but almost certainly in the spring, the ice and snow in the upper forests on Mount Hood melt, fattening the creeks that feed the rivers that run down off the mountain to the Columbia. When that happens, trickling streams that practically go dry in August turn terrible and tear through their stream beds, hauling down logs and boulders, gravel and silt and, all too often, winter steelhead and ready-to-spawn coho salmon.

When the forests have been recently lumbered-out, or summer residents with their streamside cabins have cleared the creeks of fallen trees and old stumps, the winter torrents can be especially destructive. Nothing slows the water down. Wild steelhead and late coho salmon pushing to get upstream to spawn have more than the usual difficulty. The rushing water rips by, and the grade is so steep that the fish tire and fall back, washed sometimes as far as the Columbia itself.

The whole Mount Hood National Forest is crisscrossed with these temperamental streams. In the past they supported sizable runs of coho, winter and spring steelhead, spring chinook and some sea-run cutthroat trout. Degradation of the runs throughout the Columbia River Basin, and specific damage from timber harvest practices and downstream dams, culverts and other passage barriers have left only a remnant of the native Mount Hood drainage salmonids.

Most fisheries biologists consider it essential to retain wild fish stocks in order to assure the long-term survival of Columbia River salmon and steelhead. Propagation of these stocks forms a significant part of the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program, in both its original and recently amended versions.

"The ability of Columbia Basin fish populations to adapt to environmental change depends on their genetic diversity," the Program states. "Fish that spawn naturally," it goes on, "are subjected to constant selective pressures, re-

Carlotta Collette photos

sulting in an evolution toward strong, resilient, and diverse stocks. Since each stream or drainage offers a different environment which influences the natural selection process, the fish stocks originating there will be genetically unique to that drainage."

The narrow gene base of hatchery fish promotes the kind of vulnerability often seen in modern agricultural practices. Fields planted to only one crop can be wiped out by a single disease or predator. The same is true for fish species. Without a broad genetic pool to draw on, the whole species is more fragile.

Unfortunately, much of the wild fish spawning and rearing habitat in the Columbia River Basin has been lost to hydroelectric development. Few natural spawning areas remain on the Columbia River itself. The Grand Coulee, Hells Canyon and Dworshak dams blocked passage for migrating fish, cutting off thousands of square miles of habitat, resulting in the extinction of certain salmonid stocks — including the famous river giants, the "June Hogs."

Many remaining areas that are suitable for spawning and rearing native stocks or naturally reproducing hatchery stocks (hatchery fish outplanted into tributaries of the Columbia that return to these surrogate streams to spawn) are also damaged or partially blocked. This is the case with three subbasins in the Mount Hood National Forest: the Sandy River Basin, the Hood River Basin, and the basin of Fifteenmile Creek. ▼

In recent years, the Oregon Department of Fish and Wildlife (ODFW) has worked with the United States Forest Service (USFS) and representatives of the Warm Springs Tribes (the eastern half of Mount Hood National Forest lies within their ceded territory) to develop a comprehensive plan identifying anadromous fish habitat needing rehabilitation in the forest. By working together they were able to cover both federal and nonfederal lands. In subbasins like that of Fifteenmile Creek, more than 80 percent of the riparian* habitat is privately or municipally owned. To improve the full run of the creek, coordination among the agencies was necessary.

In 1982, the participating organizations released their *Multi-Year Anadromous Fish Habitat Enhancement Plan*. It identified each stretch of creek, barriers to sea-run fish existing there, and opportunities for recovering wild fish habitats. It located culverts through which fish could not pass, dams that blocked upstream travel, and streams that had been scoured clean by winter floods and would no longer provide resting and rearing areas for salmon and steelhead.

The restoration is expected to take from 10 to 20 years to complete. Federally appropriated funds will cover some of the expenses, and volunteers help to keep costs down. Where private utilities have hydroelectric dams that are a part of the problem, the utilities are cooperating with funding for fish passage at the dams. (Portland General Electric, for example, spent more than $1 million to improve fish passage at their Marmot Dam on the Sandy River.)

Now, under auspices of the Council's Fish and Wildlife Program, the Bonneville Power Administration will contribute funds toward the three basins' repair work. The total bill for opening access and improving the spawning and rearing capabilities of these upstream habitats is expected to run about $5 million over the next 20 years. The work is part of the compensation for spawning and rearing habitat that cannot be restored in other parts of the Columbia Basin.

Hood River Basin

From high in the meadows near the peak of Mount Hood, the many sources of the Hood River begin their tumble down the beautiful valley that carries the river's name. Speeding rills spill into the East, West and Middle Forks of the river that has a total run of more than 160 miles. The Hood River drains about half the land surrounding Mount Hood. Its headwaters flow from as far west as Lost Lake near the Devil's Pulpit, and as far around the mountain as the southern meadows.

The river provides irrigation water for the valley's famous fruit crops and power at Powerdale Dam just up the hill from the town of Hood River. With the planned habitat restoration, more than 20 miles of prime chinook, steelhead and sea-run cutthroat trout spawning and rearing habitat will be opened. The Forest Service expects an additional 35,000 wild and naturally spawning smolts from the project.

The Lake Branch of the Hood River beginning north and west of the mountaintop is already receiving attention. In 1983, USFS biologists Ken MacDonald and Rick Ragan built boulder berms and rock-filled wire baskets known as gabions to keep good sized spawning gravel from being washed downstream, and to create deep

USFS's Dave Heller (left) and Rick Ragan (right) examine a log weir (dam) they constructed in the Lake Branch of Hood River.

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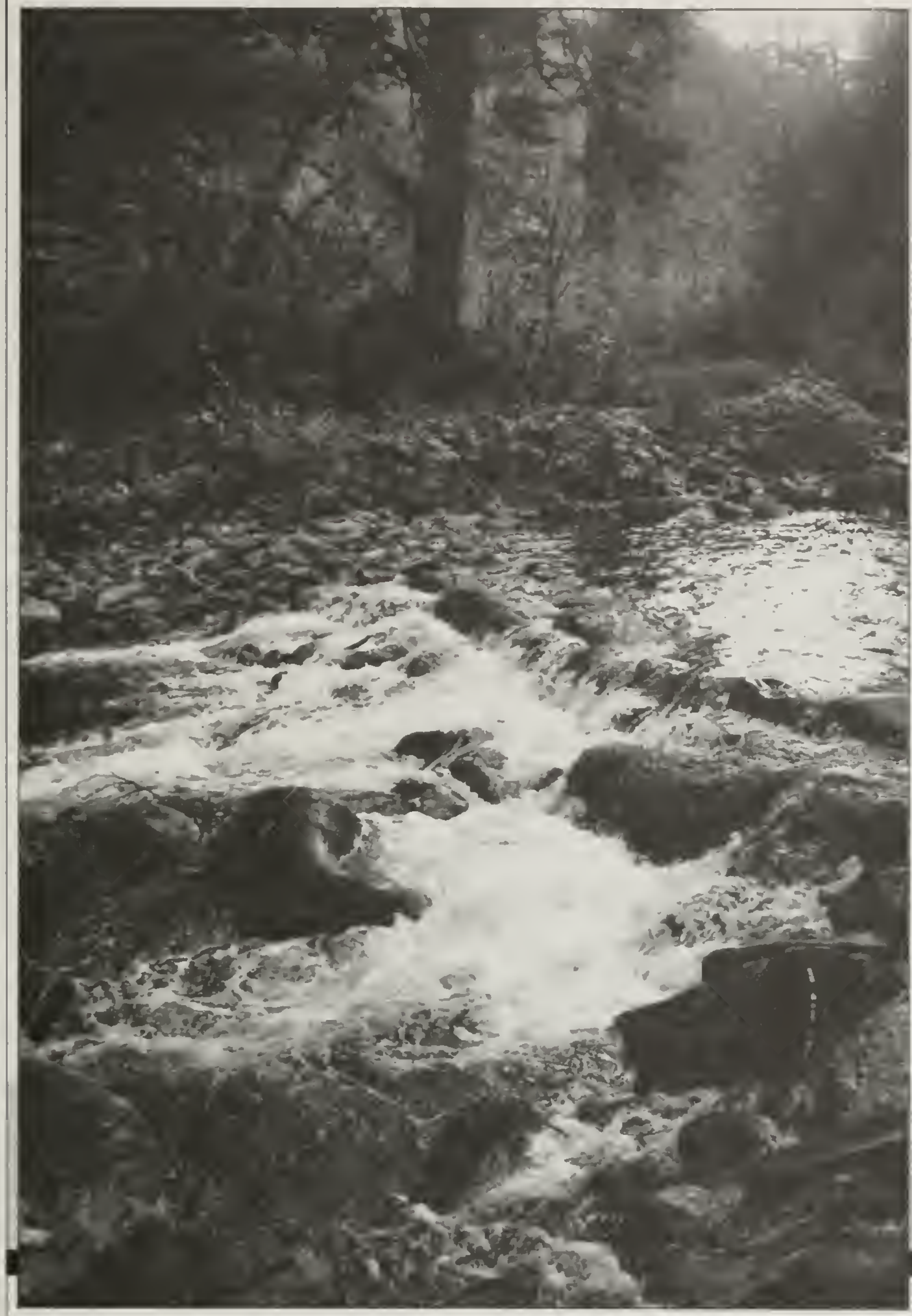
*Riparian refers to the area along the banks of a river.



Boulders, downed logs and handmade resting pools slow Still Creek and provide wintering-over areas for salmon and steelhead.

pools for rearing young winter steelhead. (Young steelhead stay in their natal streams for up to two years before heading down the river to the ocean.)

In 1984, the work on Lake Branch continued. Because of eccentric flow conditions on the river caused by the high gradient and the impressive 130 inches of annual rainfall at Lost Lake itself, the Lake Branch was widening its streambed and hauling almost everything along its banks down the mountain. As a working model, MacDonald and Ragan played Mother Nature by cutting a meandering side channel to the main stream and anchoring huge boulders and partially buried logs and stumps to slow the forceful water down.

"We ran some calculations to see how big our boulders and trees needed to be to resist the stream's pull," Ragan explained. "But, finally we resorted to observing the river. We saw which rocks seemed to be stable over several years, and matched that size." If this summer's work proves successful, Lake Branch restoration will be replicated in other reaches of the Hood.

Sandy River Basin

Most of the western flank of Mount Hood is drained by the Sandy River. The Bull Run, Salmon and Zig Zag rivers all flow into the Sandy, along with dozens of smaller creeks. The Sandy Basin provides drinking water and electricity for the city of Portland. Spread out along the tendrils of the Sandy are some of the finest wild fish habitats in the Northwest. But dams like the city of Portland's Bull Run Diversion, just six miles from the confluence of the Bull Run and Sandy Rivers, have locked the fish out. Portland recently agreed to double the hatchery fish supplied to the Sandy system as a means of compensating for the fish loss, but that leaves many miles of wild fish habitat above Bull Run and the Marmot Dam to be addressed.

Because the area is still the site of timber harvests, money set aside from timber sales contracts (called Knutson-Vanderberg or KV funds after the legislators who authored the program) is being used to recover the riversides. The KV allotments are limited, however, and, according to USFS biologist Dave Heller who is coordinating habitat improvements in the Mount Hood National Forest, "Unless you want to only make improvements within harvest areas, you can't do much with KV money. If you want to take a basinwide approach you can't be limited by property lines or timber sale boundaries."

So, Heller submitted an amendment to the Columbia Basin Fish and Wildlife Program to include the Sandy system in its Natural Propagation — Section 700 measures. "The Fish and Wildlife Program," Heller reasoned, "provides an umbrella for broad scale planning and programming. With the Planning Council we have a group that shares our responsibility for the fisheries. The Council and its Program can add credibility to our work and ongoing funding for the 10 or 20 years some of these projects might take."

Streamside plantings and a culvert fitted with baffles improve passage and water conditions for winter steelhead on Fifteenmile Creek.

Still Creek is one of the feeder streams that enters the Sandy via the Zig Zag River. Its flow is considered moderate most of the year, but in the winter, Still Creek can kick up and cut a mean chute down the hill. This erratic behavior has long worried summer residents of leased cabins along its reach. In the past, the river's banks were protected against washouts by huge stones heaped over whole riparian stretches. This bulwark, called riprapping, stabilized the waterways but sped up the creek by confining it between what are essentially stone walls. Spawning gravels and resting areas within the river were destroyed. A favored approach is to plant trees along the riverside and, as on Lake Branch, anchor boulders and tree stumps within the river itself to temper its course.

Forest Service biologist Jeff Ueble did just that along Still Creek. He also worked with the summer residents to encourage them to leave downed trees and other natural flotsam in the creek, rather than clean it out as if it was someone's kitchen.

Fifteenmile Creek

A whole series of almost parallel creeks shoot toward central Oregon dropping into the Fifteenmile Creek that enters the Columbia near The Dalles. Fifteenmile Creek supports the easternmost run of wild winter steelhead trout in the state of Oregon, but the fish have had much to contend with in their effort to survive.

There are passage problems near its mouth — poachers who regularly cull fish halted at Seufert Falls a few miles up, severe stream channel and riparian zone damages, and adverse water quality conditions including very high sediment loads and lethal summer water temperatures through much of its basin.

All of these factors combined to strain the viability of the wild run. Only about 20 to 30 miles of good habitat in the upper forests on Mount Hood are sustaining the winter steelhead. Project coordinators estimate that passage improvements and the restoration of over 100 miles of available habitat along Fifteenmile Creek are likely to increase annual smolt production from a current limit of about 17,000 to as many as 120,000.

In the upper reaches of Ramsey Creek (a tributary of Fifteenmile) the work has centered around getting the fish over a diversion dam and past two culverts. Volunteers modified the diversion dam so that fish can now traverse it. One of the culverts was removed so fish could get through. The remaining culvert was retrofitted with steel plate baffles that transform it from a slick impassable tunnel into a short series of riffles.

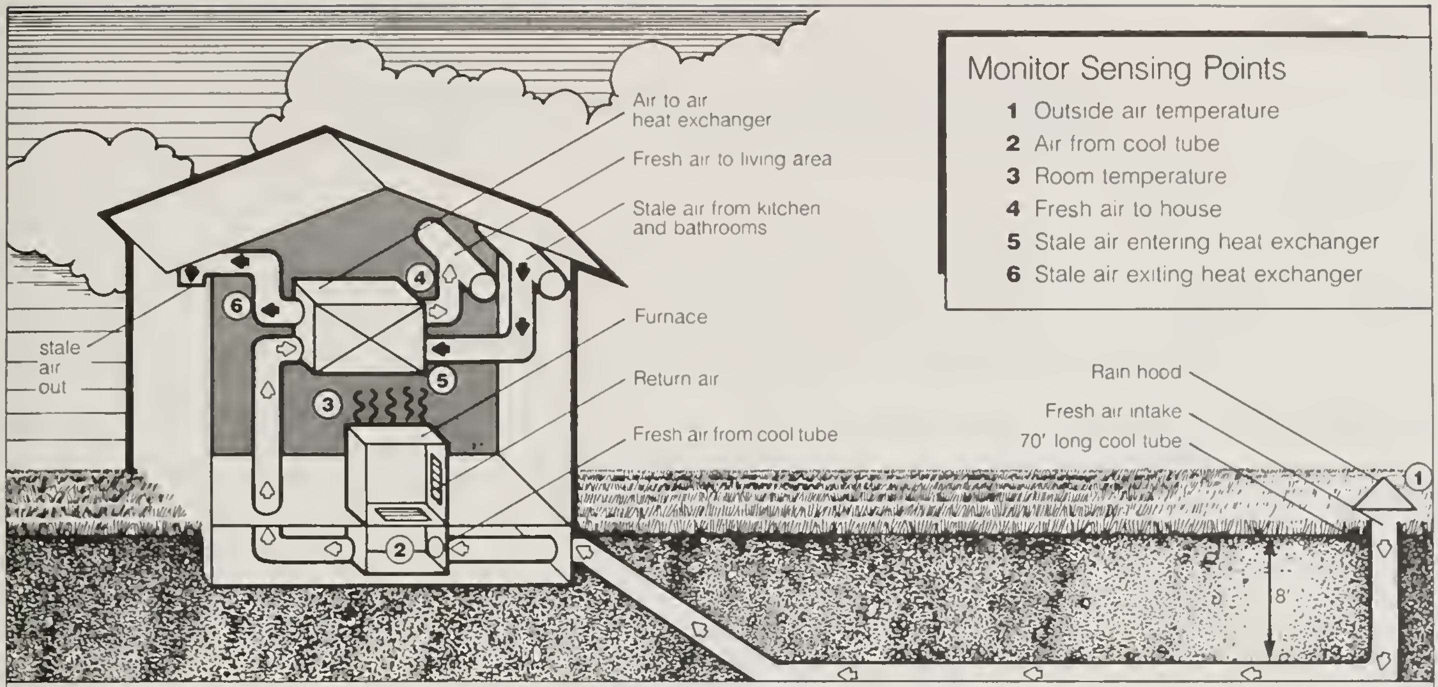
Lower on Ramsey Creek and on Fifteenmile Creek itself where the water flows through private land, Oregon Department of Fish and Wildlife biologists worked with local farmers and ranchers to replant riparian zones that had been damaged by cattle and bad weather. The newly covered streamsides are protected from erosion and shaded from hot sunlight by tenacious and fast-growing willows and other adaptable plant matter. Fencing keeps the cattle out of the creek so the plants can take hold.

Seufert Falls, near the creek's dip into The Dalles, required special handling. ODFW biologist Tim Unterwagner remembers watching winter steelhead, confused by high water that sent the overflowing creek over a stone ledge rather than down its normal bed, jump repeatedly on the ledge in their futile attempt to negotiate the falls. "In one afternoon I saw more than 90 fish batter themselves against the rocks," he said.

A simple fish ladder was considered to grade the steep chute, making it more passable. The proposed design and construction budget came to over $60,000, but ODFW pulled together a community effort and built the ladder for only $1,800.

The work going on in the Mount Hood National Forest and surrounding areas is a good example of the kind of "experimental probes of the natural system" spoken of in the amended Columbia River Basin Fish and Wildlife Program. As little as necessary is done, it is as inconspicuous as possible, and it is studied to see how effective it is and how much it can be imitated in other parts of the basin.

USFS's Dave Heller outlined the dilemma such quiet work in nature presents, as well as an answer to that dilemma. "We try to improve streams and yet have them look as though no one has tinkered with them. But a lot of people like to see the evidence of their doodling with nature. They don't recognize anything unless it's clearly visible to them. The Program lets us do our work. It is affirmed by other work throughout the whole basin, and the fish will benefit for it. The Program helps to legitimize our efforts." ■



Applying creativity to energy efficiency

COOL TUBES

by Mickey Riley

Homeowner Howard Rider has come up with a new application of an existing technology that improves the efficiency of his Thermabilt home in Yakima.

Rider's 1,466-square-foot home, built by Bill Rehfield of Yakima, is one of 230 homes being constructed as part of Washington state's Thermabilt program. The homes are being built to the Northwest Power Planning Council's model conservation standards.

Like all homes built as part of the program, this home enjoys the benefits of an air-to-air heat exchanger. Rider has incorporated the use of a 70-foot long "cool tube," buried eight feet in the ground, as a vehicle for bringing fresh air into the heat exchanger.

While the system is designed primarily for summer cooling, incoming air in the winter is prewarmed by absorbing heat from the earth. The day the author visited this home, the outside temperature was 26 degrees F., yet the air entering the system had risen to 52 degrees after moving through the cool tube. From that entry point, the 52-degree air traveled through the home's heat exchanger. There, it absorbed heat from the home's exiting air and climbed to 65 degrees.

By pre-warming the fresh air through the cool tube system, Rider calculates that he has improved the heat exchanger's efficiency to 85 percent. "I was really pleased recently," says Rider, "when the outside temperature was 0 degrees, yet the cool tube temperature never went below 40 degrees."

Rider refers to his innovation as "an application of an old idea to an existing technology. Cool tubes have been around for a while," says Rider, "and have been used as a sort of poor man's air conditioning system. I got the idea from an article in *Mother Earth News*, and thought if the ground temperature is the same year round, why wouldn't it work in conjunction with a heat exchanger."

The system was designed by Rider, who spent 25 years working with heating, air conditioning and refrigeration systems. Before retiring, Rider worked for Pacific Northwest Bell redesigning and retrofitting controls and mechanical systems.

Costs for the cool tube were kept relatively low since Rider did much of the labor himself: cutting and gluing the joints and supervising the trench work which was done in conjunction with septic tank trenching. Rider used regular 12-inch, low pressure irrigation pipe manufactured by Simpson Plastic of Sunnyside, Washington. Total cost for the system was $954, which includes installation and sales tax. "The next house Bill builds, we'll try a recirculating cool tube underneath the crawl space, in an effort to further reduce costs," says Rider.

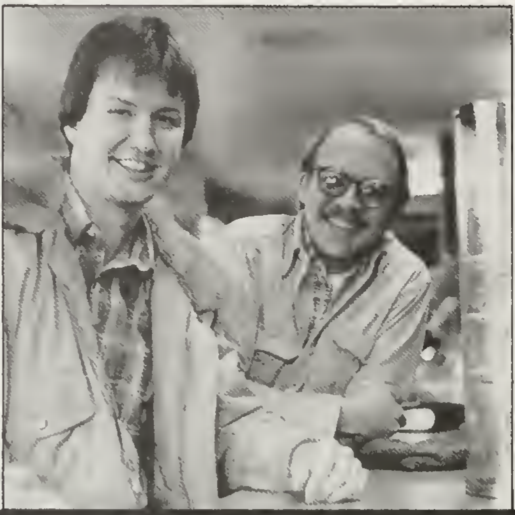
The Riders have been living in their new home since November 15 and ". . . overall, we are really pleased with how well it's performing. Moisture is definitely not a problem. And, last week, when the highest temperature of the day was 20 degrees, our home got up to 76 degrees just from the solar gain. The furnace never even came on!" ■

Gunnars Osis illustration

MCS early adopter

Small City Big Ideas

by Steve Engel



Bearing McCleary's conservation message to the region, Wally Croshaw (left) and Chris Brown lean on the counter at Mabel's Cafe.

Darby Collins/Bonneville Power Administration photo

McCleary is a small city in western Washington which, until now, was perhaps most famous for its Bear Festival. The Bear Festival draws 5,000 visitors each July to sample the bear stew and attracts the annual attention of the Save Our Bears society (SOBs), which protests the stew.

By all reports, there was no protest on November 14, 1984, when the five-member city council voted unanimously for early adoption of the model conservation standards (MCS). McCleary may be smaller than some cities — its municipal utility serves 843 customers at last count, with 550 of those customers heating their homes electrically — but it sees large advantages in the standards.

"We have a lot to gain," utility superintendent Wally Croshaw said, "certainly from local adoption but especially from regionwide use of the standards."

"We're a full requirement customer of Bonneville Power," Croshaw said, "so any new resources Bonneville has to build, we have to pay for. And that money doesn't stay in this community, you understand. We ship it to Portland. So regionwide enforcement of the standards would be of benefit to the ratepayers of McCleary, and to the businesses here."

Besides, this city 20 miles west of Olympia is home of the Simpson Timber Company, which makes wooden doors. "We wanted to make the point that MCS homes can use these kinds of doors," Croshaw said. "People who only look at the 'prescriptive path' approach think you need a metal door with a foam core. But that's not true. The 'energy budgets' approach provides for a little extra energy efficiency in places like the insulation of the water heater, and then these doors do a fine job helping a home to meet the standards."

Croshaw added that "adopting early also gives us time to go through our learning curve, so that by January 1986 we'll have it pretty well down — how to build these homes. We also get more assistance than if we waited until the rush is on."

The surcharge (on utilities serving jurisdictions that don't adopt the standards or comparable measures) "wasn't stressed much in city council discussions," Croshaw said. "I think the conservation standards can stand on their own merits without the threat of a surcharge. And all the council members here have had their homes weatherized so they know how it feels to live in that kind of home. And they know what it does for their heating bills. We also learned from our residential weatherization program that you can't get the same energy savings if you retrofit. And it costs you more so you don't save as much money."

There were five new housing permits taken out in McCleary during 1984. "We've had outstanding cooperation from our local builder and from our building official," Croshaw said. "The builder has already delivered some plans for MCS houses. And Chris Brown, our official, has been very supportive, very helpful. In some areas, the building people don't want to change. They say, 'Aww, we don't need that kind of insulation around here.' Well, let those guys fight about it if they want to. We'll know what we're doing when the time comes."

Chris Brown, who inspects buildings on a contract basis, is preparing McCleary's grant application for the Bonneville Power Administration financial assistance. He has a choice between a self-certification program, with spot inspections coming from Bonneville, or enforcement based on local inspection. Brown has heard that some inspectors in bigger cities think Bonneville's local enforcement compensation of $125 per home is too low. Brown thinks it's fine. "It's adequate for the shorter distances we have here," he said.

Brown also thinks self-certification won't work. "It'll result in lower compliance and lower effectiveness of the standards. So the savings will be lower, too."

And savings are the point for McCleary. "Every dollar we can keep in the community helps our economic development," Brown said.

About that Bear Festival, by the way. It started as a Second Growth Festival many years ago, back when the Simpson Timber Company was the Henry McCleary Mill. To protect the newly replanted seedling firs, residents would head out into the knee-high woods with their rifles and shoot any bears they could find in the vicinity. *Waste not, want not* must be an old McCleary imperative — the bears went into a stew and the stew went into the locals.

How much bear goes into the modern stew, only the festival cooks know. And neither they nor the fine wooden bear atop the McCleary city hall are telling. ■

PUBLIC UTILITY COMMISSIONERS SPEAK OUT ON REGIONAL PLANNING

Council Chairman Chuck Collins said of the meeting, "The only thing unusual about it is that it hasn't happened before."

Eleven of the region's 12 public utility commissioners met with the Northwest Power Planning Council last December and urged the Council to take a stronger policy and planning role.

The commissioners, who set rates for the investor-owned utilities in their states, originally sought such a meeting to discuss sale of Northwest surplus power to California. In the course of a wide-ranging public discussion, several of them said they had no quarrel with Bonneville's interim intertie policy and looked forward to its adoption. Others expressed some doubts about that policy. The "intertie" is the transmission system for moving power from the Northwest to the Southwest.

While the commissioners discussed out-of-region sales, including pricing and marketing methods, they also touched on such issues as cogeneration, average system costs, renewable resources, conservation and the impact of the direct service industries on the regional power picture. Excerpts from the commissioners' comments appear below.

Present from the Idaho Public Utility Commission were Conley Ward, president; Perry Swisher and Richard High. Representing the Montana Public Service Commission were Tom Schneider, chairman; Clyde Jarvis, Howard Ellis and John Driscoll. The Oregon Public Utility Commission has one commissioner, Gene Maudlin, who attended. From the Washington Utilities and Transportation Committee came Robert Bratton, chairman; A.J. "Bud" Pardini and Mary D. Hall.

by Steve Engel and Ruth Curtis

Carlotta Collette photos

ROBERT BRATTON, chairman Washington Utilities and Transportation Committee

We're here because, individually and collectively, we believe that the Northwest Regional Power Act established the Power Council as the planning body to forecast electrical loads and to develop the best and least-cost resource strategy to meet those loads . . . We're here because the average system cost methodology essentially eliminated or seriously degraded the benefits to the residential and small farm ratepayers under the energy exchange credit . . . The Power Planning Council is the single entity in the region with regionwide perspective and the one best able to develop the intertie access policy and ensure its implementation.

CONLEY WARD, *president*
Idaho Public Utility Commission

As we all know, with an intertie the size of the one that connects the Southwest and the Northwest, the disposition of resources along that intertie will drive planning decisions and, indeed, drive all resource decisions. These are policy matters that affect every person in the Northwest and for that matter in the Southwest. They do not affect only Bonneville Power and its customers.

. . . The federal policymakers have to recognize that Bonneville is a business. It is a utility and must run its own house in its own interest. The region must run the public policy decision-making apparatus in its interest and the collective interest of all the citizens in the region.

We wish to have the Regional Council, as the only body we know that represents all the citizens in the region, that is responsive to the public process and elected officials, undertake the setting of key regional policy decisions. But more importantly than who is to decide, is how the decisions are to be made. We want a fair process.

We want due process with all the attendant trappings or as many as the decision maker can put in place, realistically . . . We want a public process. In the absence of that, we all agree that the regional effort, as a regional effort, will die. We will be a region by geography. We will be a region by some other factors, but we will not be a region for energy matters.

GENE MAUDLIN
Oregon's Public Utility Commissioner

Out-of-region sales are part of regional power planning and therefore, BPA should pay special attention to what the regional Power Council has to say on that subject . . . One of the issues is intertie access policy, and the regional Council should take an active and dominant role in its development. But I want to act in it, too. Because a regional solution, in which all of the utilities are looked at as a whole, may not be the best solution [from] an Oregon point of view. A policy that denies or sharply restricts opportunities for long-term, out-of-region sales might comfort a Northwest utility that says there are imminent power supply shortages. It will not comfort an Oregon utility, like Portland General Electric, which has a long-term surplus and is able to make long-term firm sales.

. . . On cogeneration and small power production, you only have to look at who is buying the output of cogenerators and small power producers to know that something is wrong here. The buyers are the investor-owned utilities. They alone are being saddled with new financial burdens at a time when [they are] already in surplus. . . . All I'm saying is that we should not expect the IOU customers to pay more for it (cogeneration) than anybody else pays for it.

. . . If you and I are going to talk to Bonneville about intertie access, then we should also talk about conservation contracts, small power production, average system cost, and anything else in which some or all of us have a stake. It seems to me that if we do not begin seeing decisions made cooperatively and rationally, then it might be best for each of us to go our own way.

TOM SCHNEIDER, *chairman*
Montana Public Service Commission

The Council has a statutory role to develop the policy, it has public legitimacy, it has resources, and it has the opportunity for public accountability that certainly does not rest with Bonneville. The Council then has to challenge, it has the opportunity to play that role aggressively . . . I am here today, our commissions are here today, collectively, to urge you as vehemently as we can to pursue that role with all the vigor and dedication that you've shown in the plan. But it's going to take guts.

. . . Somebody at the regional level needs to determine a standard methodology for pricing energy. We need to get our technical people together that understand the mathematics of inflation and discount, nominal and real, [and] come up with a standard methodology that we can all — whether or not we agree that it's the right one — we agree on a methodology. So that when energy is sold on a long-term basis, we can compute it in that standardized method.

MARY D. HALL
Washington Utilities and Transportation Committee

If the process does not become more democratic, you will find the Northwest Regional Power Council frustrating the state regulators [as others have] . . . But you have, because of the way you went about developing the plan itself, a history that says you understand negotiation, you understand how to use data and analyze it, and you are a body which makes public policy decisions in the open. We are looking for that, and we are asking that you provide leadership in that arena . . . what we're looking for is a process which can deal with the multiple, varied, and sometimes warring interests, that have to do with the power and how it's used in this region.

A. J. "BUD" PARDINI
Washington Utilities and Transportation Committee

. . . It appears to me that in the last two years, the direct service industries of the Northwest have had significant fluctuations in their use of power. It further appears to me that this type of fluctuation will continue in the immediate future and into the long-range future, and that . . . any type of reasonable forecasting of needed energy, as well as the resources to supply that energy are going to be uncertain until some stability is brought to this major component of usage . . . In essence, what it may boil down to is this — that the continued rising cost of electric power may well force the aluminum industry from the Northwest, a position which I don't think we should advocate, but one which we have to face up to.

. . . One of the things we have talked about, on a very limited basis, is resource acquisition. We dealt very slightly on whether the intertie should be built or not. Perhaps rather than thinking of a long-range . . . new thermal plant, maybe what we need to think of is additional intertie capacity which could tie us into other grids in the event some of these things don't happen. We don't always have to be talking about a resource being a plant. It could just be the portability of energy from some other area.

RICHARD HIGH
Idaho Public Utility Commission

Under the PURPA* law, our four main electric utilities are all complying with PURPA and commission orders. . . . The fact that Bonneville is out of the picture means simply this, that a cogeneration or small power producer who is in the Bonneville service area has . . . no alternative . . . but to move that power to the nearest investor-owned utility and to receive whatever the posted avoided cost rates are for the power it delivers. We as a commission have been supporting that, but we're beginning to have second thoughts.

*Public Utility Regulatory Policies Act

PERRY SWISHER
Idaho Public Utility Commission

The real options say that we can take the resource and market that resource in such a fashion that it's no different from the grain that moves out of the Port of Portland — in that you can no longer distinguish whether that bushel of wheat came from Tom Schneider's ranch or from my ranch. In other words, the approach with energy should be the approach that says we have energy to market and it's a melded sale. So that the identification that begins back here with a specific turbine does not follow all the way down to San Diego. That's a very simple precept of marketing, and it's terribly important in that what we do is what Sunkist or Diamond Brand walnuts do. You just put the Northwest label on it, and the hell with whose ranch it came off of.

. . . We don't look to you to be the seat of all wisdom. We want to be able to sue you once in awhile, that's what we've got lawyers for. We want to be able to discuss things. Most of all, we need a working process, not one that gives us once again an all powerful seat of authority, but a working process for the region. If we get that, we'll be healthy and we'll be happy.

COUNCIL PUBLICATIONS ORDER FORM

Please send me a copy of the following publications of the Northwest Power Planning Council.
(Note: not all publications are available immediately, but will be sent to you as soon as they are.)

☐ Columbia River Basin Fish and Wildlife Program (1984 revised edition)
Those who received the draft will automatically receive a copy.

☐ Brief of Respondent, Northwest Power Planning Council filed before the U.S. Court of Appeals for the Ninth Circuit in the Seattle Master Builders Association et. al. suit

☐ Transcript of Council Hearing with Public Utility Commissioners on December 11, 1984

☐ Issue Paper on Washington Nuclear Plants 1 and 3 Planning Assumptions

☐ Status Report on the Hood River, Elmhurst, and ELCAP (End Use Load and Conservation Assessment) Projects

☐ Issue Paper on Conservation Supply Curves for all Sectors

☐ Issue Paper on Financial Assumptions

☐ Issue Paper on Environmental Criteria for Resource Acquisition

☐ Status Report on Industrial Conservation Survey

Note: Please do not order the following reports if you work for a fish and wildlife agency or Indian Tribe in the Columbia River Basin. The authors of the reports have been asked to send copies directly to your agency.

☐ Annual reports on Mainstem Passage from the U.S. Army Corps of Engineers, and the Mid-Columbia Public Utility Districts.

Annual Columbia River Basin Fish and Wildlife Program work plans from the following agencies:

- ☐ U.S. Army Corps of Engineers
- ☐ U.S. Bureau of Reclamation
- ☐ Bonneville Power Administration

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Northwest Power Planning Council
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Portland, Oregon 97205

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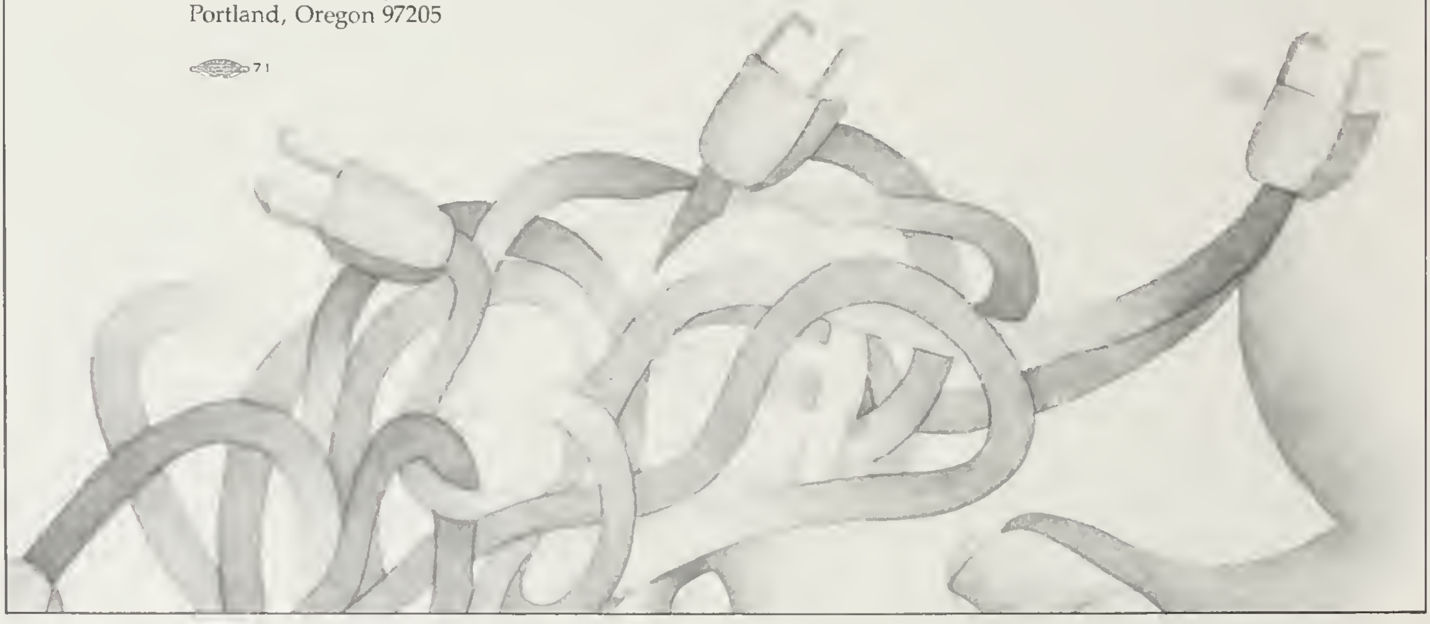

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NORTHWEST ENERGY NEWS

Volume 4, No. 2 Northwest Power Planning Council *March/April 1985*

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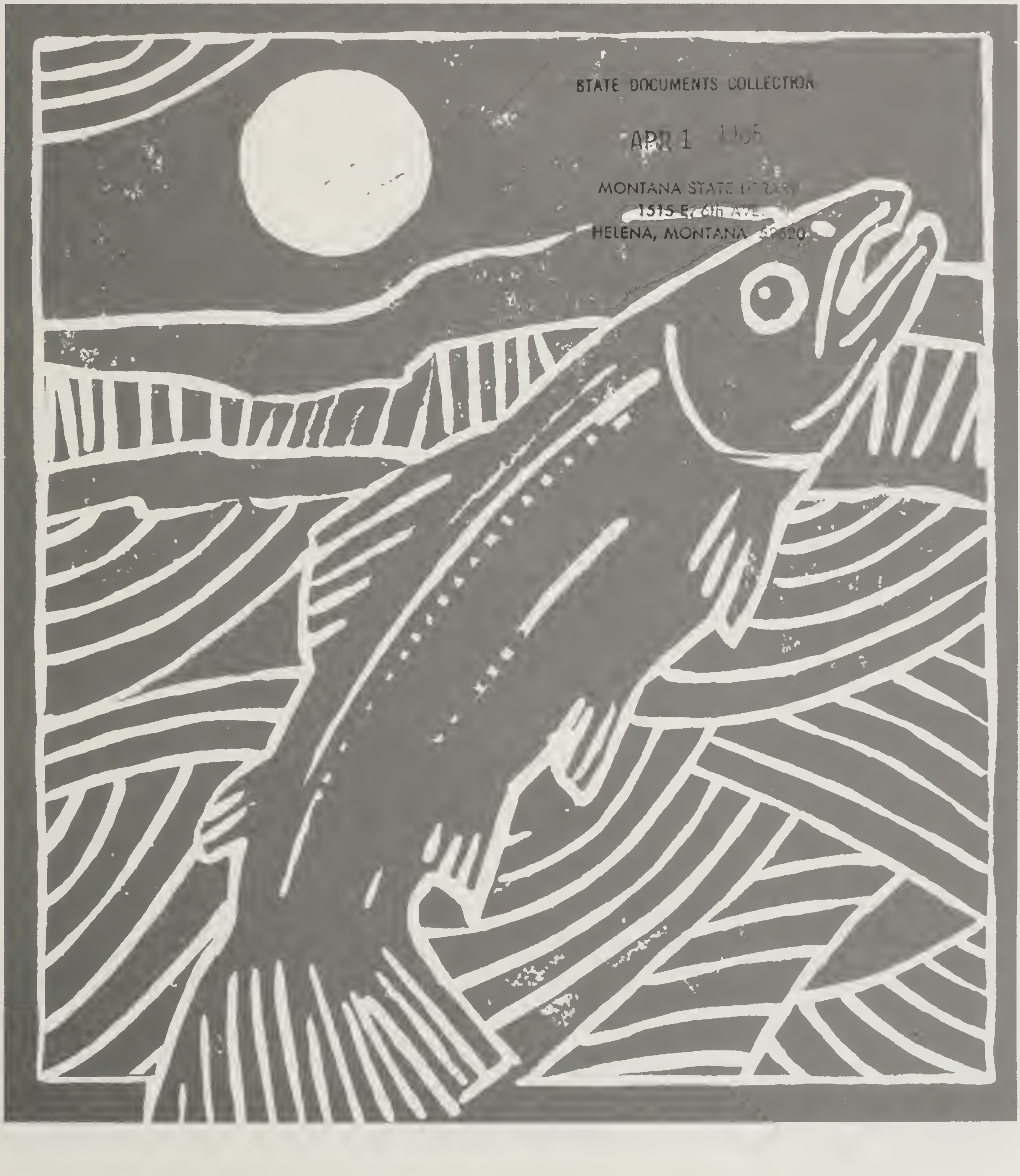

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Idaho

Northwest Power Planning Council
Statehouse Mail
Towers Building
450 West State
Boise, Idaho 83720

Telephone: 208-334-2956

Council Members:
W. Larry Mills
Robert Saxvik, vice chairman

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620

Telephone: 406-444-3952

Council Members:
Morris Brusett
Gerald Mueller

Oregon

Northwest Power Planning Council
505C State Office Building
1400 S.W. Fifth Avenue
Portland, Oregon 97201

Telephone: 503-229-5171

Council Members:
Donald Godard
Roy Hemmingway

Washington

Northwest Power Planning Council
Olympic Tower Bldg., Suite 700
217 Pine Street
Seattle, Washington 98101

Telephone: 206-464-6519

Council Members:
Charles Collins, chairman
Kai Lee

Central

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, Oregon 97205

Telephone: 503-222-5161
Toll Free: 1-800-222-3355
(1-800-452-2324 in Oregon)

Executive Director: Edward Sheets

NORTHWEST
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The Northwest Power Planning Council is required to develop a program to restore the Columbia fisheries and a regional electric energy plan, to be carried out by the Bonneville Power Administration, emphasizing cost-effective conservation and renewable resources.
Executive Editor: Dulcy Mahar
Graphic Design: Linda Sawaya
News Editor: Steve Engel
Features Editor: Carlotta Collette
Special Departments Editor: Ruth Curtis

EDITOR'S NOTES

The Council's "calendar" (below) is available to announce meetings, workshops, and conferences dealing with energy and fish and wildlife issues. Send information to Ruth Curtis, special departments editor, at the Council's central office (see address this page). Please include the name of the event, time, date, place, sponsors, and a number and/or address for more information.

Deadline is the tenth of each even numbered month as *Energy News* comes out in the odd numbered months. Because of limited room, priority will be given to events of regionwide interest.

Cover illustration by Yasu Osawa/ Upstream Productions

CALENDAR

March 13-14 — Northwest Power Planning Council meeting in Portland, Oregon.

April 3-4 — Northwest Power Planning Council meeting in Missoula, Montana.

April 17-21 — "Globescope: A National Assembly of International Significance" in Portland, Oregon. A grassroots project to examine critical global environmental problems and determine how Americans can most effectively contribute to finding timely solutions. Contact Diane Lowrie, Global Tomorrow Coalition/Globescope, P.O. Box 15264, Portland, Oregon 97225. (503) 232-3495.

April 24-25 — Northwest Power Planning Council meeting in Seattle, Washington.

May 1-3 — Symposium on "Small Hydropower and Fisheries" in Denver, Colorado. Sponsored by the Western Division and Bio-engineering Section of the American Fisheries Society. Contact Conferences and Institutes, College of Engineering and Architecture, Washington State University, Pullman, Washington 99164-2992. Phone: (509) 335-7225 (Nancy Mack) or (503) 335-1404 (John F. Orsborn).

May 9-10 — Seminar on "The Air-Tight Dry Wall Approach for the Northwest" in Seattle, Washington. Sponsored by the Energy Business Association of Washington, 300A Maritime Building, 911 Western Ave., Seattle, Washington 98104. (206) 622-7171.

May 15-16 — Northwest Power Planning Council meeting in Portland, Oregon.

May 19-22 — Conference on "Conservation in Buildings: Northwest Perspective" in Butte, Montana. Sponsored by the National Center for Appropriate Technology (NCAT); Montana Department of Natural Resources and Conservation, Energy Division; Bonneville Power Administration; Northwest Power Planning Council; Battelle Pacific Northwest Laboratories; Washington State Energy Office; and Oregon Department of Energy. For information contact NCAT, attention: Conference, P.O. Box 3838, Butte, Montana 59702. (406) 494-4572.

June 3-6 — "Renewable Energy Technologies Symposium and International Exposition." Anaheim Convention Center and Marriott Hotel, Anaheim, California. Contact Linda Ladas, TMAS, 680 Beach St., Suite 428, San Francisco, California 94109. (415) 474-3000.

June 5-6 — Northwest Power Planning Council meeting in Portland, Oregon.

June 18-20 — "Northwest Energy Expo '85" at the Sea Tac Red Lion in Seattle, Washington. Sponsored by Puget Sound Power and Light, in cooperation with the Northwest Power Planning Council, Seattle City Light, Snohomish County PUD, Tacoma Lighting Division, and IES Puget Sound Section.

June 22-23 — 1985 short course on the Columbia, "The Columbia Gorge: A Unique American Treasure." Sponsored by the Washington State and Oregon State University Cooperative Extension and Sea Grant Programs. For information contact: Short Course on the Columbia, 1919 NE 78th St., Vancouver, Washington 98665. (206) 696-6018.

June 26-27 — Northwest Power Planning Council meeting in Seattle, Washington.

Compiled by Ruth Curtis

IN THE NEWS

Northwest governors tell federal agencies they want strong Council

All four Northwest governors joined forces to send a strong letter to the heads of both the U.S. Department of Energy and the Bonneville Power Administration. The letter was a result of discussions by both agencies with the U.S. Department of Justice over the constitutionality of the Northwest Power Planning Council.

Governors Vic Atiyeh of Oregon, John Evans of Idaho, Booth Gardner of Washington, and Ted Schwinden of Montana expressed concern that the federal government could be breaking its half of an agreement with the Northwest states which resulted in the Northwest Power Act of 1980.

Earlier this year, then-Secretary of Energy Donald Hodel urged the Department of Justice to intervene in a suit against the Council brought by the Seattle Master Builders over the Council's model conservation standards. His concern centered on the Council's relationship with Bonneville. He suggested that if the Council were found to be more than "merely advisory" in regard to Bonneville, it should be declared unconstitutional and replaced by a federal panel.

Bonneville took the position that the present Council should be preserved and that the Justice Department could avoid the constitutionality issue by asking the court to sever those provisions from the Act related to the Council which constrain Bonneville.

The governors saw little difference in the two positions, noting "the effects of either action would be to remove any constraints which the Northwest states can exercise over Bonneville actions."

In the letter, the governors objected to what they called attempts "to change unilaterally the agreement made with the states" which brought about the Act. "There would have been no Northwest Power Act had it not been for the strong role granted our states through the Council.

"Without a strong Council, our states have no effective way to constrain the acquisition of expensive regional resources which could push electrical rates up even higher or which could harm our environment. Without a strong Council, the Northwest citizens who pay Bonneville's bills have no real part in planning their own energy future," they said.

In an intervening brief, the U.S. Department of Justice refused to take the positions urged by either the Department of Energy or Bonneville, positions which would have broadened the suit beyond the issues raised by the Seattle Master Builders.

The homebuilders suit focused primarily on the affordability of the standards, and the constitutionality challenge had been based on the U.S. Constitution's Appointments Clause. This clause requires officers of the United States to be appointed by the Executive Branch. The Council, which is an interstate compact agency whose members are appointed by Northwest governors, takes the position its members are not "officers of the United States." Rather, the Council is an interstate compact agency operating under the Compact Clause of the Constitution.

Justice concluded that the homebuilders' challenge to the constitutionality of the Council should be dismissed on the grounds that "the Council complies with the Appointments Clause with respect to the statutory provisions that are involved in this case."

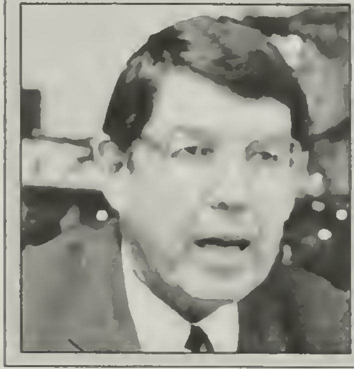
Justice stated that the standards "are recommendations only; they impose no legal obligations on anyone."

The Council believes that the standards do impose some legal obligations; however, it had never contended it could impose either standards or a surcharge, nor was the matter even a subject for contention in the lawsuit. (Some newspaper reports incorrectly identified the surcharge as the issue in the Justice Department brief, rather than the constitutional question.)

In its brief, Justice wrote, ". . . the power to make recommendations to a federal agency does not constitute the exercise of significant authority for purposes of the Appointments Clause. Otherwise, federal agencies could never receive recommendations from persons outside the Executive Branch."

The Justice Department also urged the court not to address the statutory relationship between Bonneville and the Council, and stated, "We express no view at this time as to how that issue should be resolved if the court should reach it."

The governors said they were "pleased" with the Justice Department's position. However, they remained concerned over the actions taken by the Department of Energy and Bonneville, calling them "contrary to the intent of the Northwest Power Act." That intent, they said, was a "careful balance of regional and federal authority in the Northwest Power Act. This balance of authority is the essence of the Constitutional principle of federalism and is clearly consistent with the Compact Clause of the U.S. Constitution."–*DM*


John Evans, Idaho

Ted Schwinden, Montana

Vic Atiyeh, Oregon

Booth Gardner, Washington

IN THE NEWS
continued

Preliminary demand forecasts released for public comment

Cautioning that "these results should be considered only a leading indicator of what further analysis may confirm," the Northwest Power Planning Council released four preliminary electrical energy demand forecasts for public review and comment. The forecasts cover the 20-year period 1985 to 2005.

After further analysis and review of public comment, the Council will develop draft forecasts for its new power plan. Estimates of future demand are critical to determining what additional new resources will be needed to meet the region's future electrical power needs.

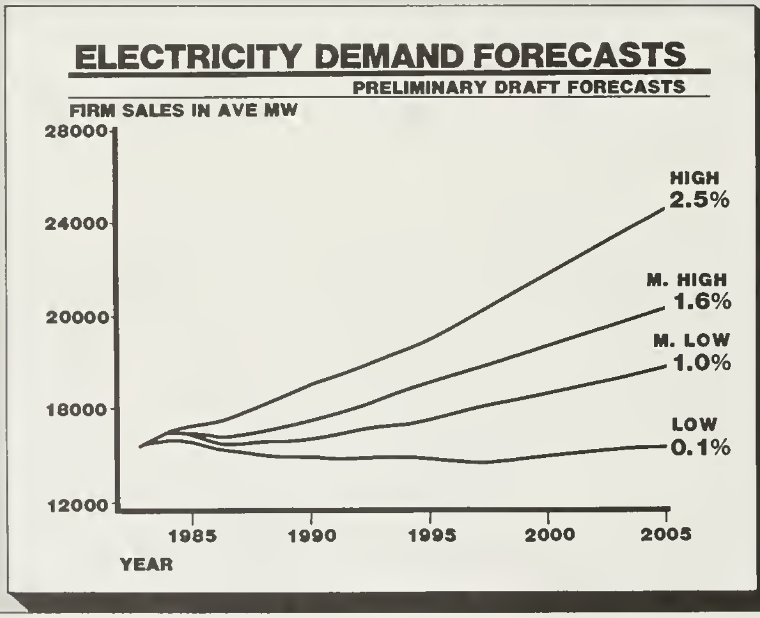
The Council's four forecasts designate a range of possible future demands encompassing high, medium high, medium low, and low growth. The range system is designed to "define the extent of uncertainty that planning must address," according to Terry Morlan, the Council's manager of demand forecasting.

The new preliminary high forecast is approximately 3,200 average megawatts lower in the year 2002, a drop of 12 percent from the 1983 forecast. Over the 20-year forecast, the preliminary results are approximately 800 megawatts lower than in the 1983 power plan. Much of the reduction is due to the fact that the region is closer to the year 2002, and electrical loads between the years 1983 and 1985 did not show much growth. Of the 3,200 megawatt load reduction, 2,400 megawatts are accounted for through updating the base. For example, if the year-to-year load growth from the 1983 power plan were applied to a 1985 base level, the resulting forecast for the year 2002 would be 2,400 megawatts lower.

The Council's Power Planning Director Jim Litchfield terms the movement in the high forecast horizontal rather than vertical. The high scenario growth rate hasn't changed significantly he explains; but it has taken longer to begin. "The forecast that the region thought would begin in 1983, has been updated to begin in 1985. The region has experienced relatively low growth during the last two years. We're still forecasting approximately the same growth rate, but it starts later. The load projections," he said, "have moved more to the right on the graph, not down. What we have found is that they didn't move closer with time, rather they moved further into the future."

A major reason for the delayed growth is that several factors considered cyclical in the 1983 plan, such as events in the forest products and manufacturing sectors, have now proven to be longer-term. Recovery from the recession which the region was in in 1983 has been slower than anticipated. Another factor has been the regional economy's shift away from resource-based, heavy manufacturing industry to non-manufacturing and "high tech" industries which are not considered heavy users of electricity.

Despite the changes, the preliminary forecast, like its predecessor, is designed to ensure adequate power supplies for the region's economic growth. The preliminary high forecast still reflects the effects of record high economic growth and less competitive prices for alternative fuels. For example, the high forecast assumes total employment in the Northwest could grow 130 percent faster than the rest of the nation. This would mean that the region's economy



What's different about the forecast?

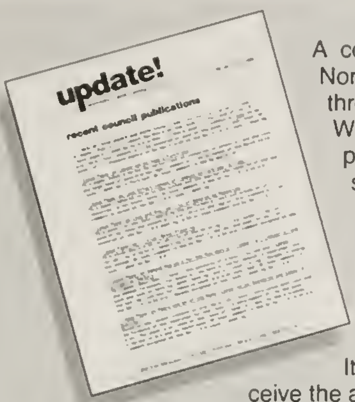
"The single most important difference in this forecast is that we've explicitly treated the risk associated with the possibility that a portion of the DSIs [direct service industries such as aluminum plants] leave the region. In our high forecast, we've assumed 100 percent of the DSIs will stay over the full 20 years. We've assumed 85 percent for the medium high, 70 percent for the medium low, and 50 percent for the low. These industries represent a very large uncertainty facing the region in its resource planning.

"The situation with the aluminum companies can't be forecast in traditional terms. You don't look at population demographics to figure out what's going to happen. The Council is *not* making predictions about what is going to happen to the aluminum companies. What we *are* doing is assessing what resources best respond to a wide variety of possibilities.

"This is a risk management issue, and we're not going to solve it through a forecast. We have to deal with the problem by properly managing resources. The strategy has to deal with both the cost and mix of resources. The Council recognizes there is uncertainty, but we aren't going to leave it in vague terms. Instead, we are trying to define that uncertainty and prepare proper responses."

–Chuck Collins
Council Chairman

update!



A convenient way to keep up to date on the Northwest Power Planning Council's activities is through **update!**, the Council's new newsletter. While the bimonthly *Northwest Energy News* provides background on major regional issues, it can not always provide timely information. **update!**, which is mailed every three weeks with the Council's agenda, provides a quick listing of all Council publications available or soon to be published (particularly issue papers), meetings and hearings, and information for public comment.

It is automatically sent to all people who receive the agenda. If you are not on that mailing list and would like to receive **update!**, please check the appropriate box on the back cover and send it to the address listed or call the Council's central office (see phone numbers on inside front cover).–*RC*

would grow faster over 20 years than the highest relative growth rate for any previous five-year period.

"We have forecast a high range which accommodates a very aggressive and strong regional economy, although it is less likely than a more mid-range economic growth. As a balance, we have a low range forecast that is as unlikely as the high. Together, these ranges allow us to adapt to either outcome," Litchfield said.

The preliminary forecast, without completion of any new resources, has the region's electrical energy surplus ending in 1990 in the high forecast, in 1994 in the medium high, in 1998 in the medium low, and continuing through the end of the 20-year period in the low forecast.

The annual growth rate for the four ranges is projected to be 2.5 percent in the high, 1.6 percent in the medium high, 1.0 in the medium low, and 0.1 in the low. This reflects current changes in economic and demographic assumptions and fuel price assumptions. These preliminary assumptions were adopted in draft form in January by the Council after a public comment period.–*DM*

Two new task forces look at conservation

Two new conservation task forces, made up of members from throughout the Northwest, began work in February to help shape the Northwest Power Planning Council's upcoming power plan.

Mark Cherniack, the Council staff member who chairs the Conservation Programs Task Force, said that group will assess results of residential, commercial and irrigation measures called for in the 1983 Action Plan. They will then make recommendations for the new Action Plan, "including what ought to be done, who can do it, and how to pay for it," he said.

According to Tom Eckman of the Council staff, the Residential Conservation Standards Task Force he chairs "will review the quality and significance of data obtained from several demonstration projects. The conclusions they draw about costs, cost effectiveness and performance will be used to evaluate and revise the residential model conservation standards for the new Power Plan."

All task force meetings are open to the public. Copies of task force agendas and minutes are available on request.
–*SE*

Two-nation salmon pact ratified by U.S. Senate

Northwest salmon fisheries representatives are calling it "the best news in decades for the salmon resource," and Tim Wapato, executive director of Columbia River Inter-Tribal Fish Commission, feels that it signifies "the dawning of a new day in fishery management." What they are excited about is the March 7 ratification by the U.S. Senate of the U.S. - Canada Salmon Interception Treaty.

The new Treaty sets limits on the ocean harvest of Pacific salmon stocks. It took nearly 20 years for the four states, two nations and 23 Indian tribes who share an interest in the salmon to come up with a treaty they could all live with.

After only two weeks of debate, the Senate unanimously passed both the Treaty and the implementing legislation needed for fisheries enhancement and harvest regulation contained in the Treaty. Bill Wilkerson, director of Washington's Department of Fisheries, commented, "It is a credit to all involved . . . that it could pass through the congressional process in only two weeks."

Anticipating equally swift ratification from the Canadians, Wilkerson added, "Now all of us can concentrate on new and creative ways to rebuild and enhance our stocks so that all fishermen have a future."–*CC*

Power lines will grace postage stamps this year. The U.S. Post Office plans to issue a stamp commemorating the 50th anniversary of the Rural Electrification Administration.

Super Good Cents signs 33 utilities to operate program

Thirty-three utilities have signed contracts with the Bonneville Power Administration to carry out the new Super Good Cents program in the areas they serve.

Under this agreement, utilities will inspect builders' plans to estimate how much electricity the home will save if it's built to model conservation standards developed by the Northwest Power Planning Council. A utility representative will inspect the home during construction to ensure that it will meet the standards. If it does, the utility will certify the completed home as a Super Good Cents home.

Super Good Cents program manager Pat Durocher said Bonneville is pleased that it has already met its goal to enter into contracts with at least 25 utilities in the region. "The response is really positive. Utilities are excited about having a program that's basically their program," she said.

Durocher said Bonneville hopes the program will stimulate construction and certification of 5,000 Super Good Cents homes in 1985, and hopes that two-thirds of all homes built over the three-year life of the program will be Super Good Cents.

Utility representatives from Washington, Oregon, Idaho and Montana have been going back to class to familiarize themselves with efficient construction techniques and with the computer software used to review builder plans. They're also learning how to promote the Super Good Cents program to the shelter industry and consumers. *– Susan Skog*

Council cosponsors regional conference

The Pacific Northwest will be the site of a major conference on energy conservation for buildings. The National Center for Appropriate Technology is conducting the conference, "Conservation in Buildings: Northwest Perspective," May 19-22 in Butte, Montana.

The conference, which is cosponsored by the Northwest Power Planning Council among others, will focus on new information in the field. Over 50 experts from the Northwest and Canada will speak on performance and cost, ventilation and airtightness, prediction and design models, domestic hot water systems, as well as other areas of technical information aimed at a professional audience. It will also serve as a forum for information exchange and review.

For information, contact the National Center for Appropriate Technology, PO Box 3838, Butte, Montana 59702. (406-494-4572). *–RC*

Three new localities adopt model standards

At diagonal ends of Washington, and in different climate zones, one county and two cities joined the ranks of early adopters of the Northwest Power Planning Council's model conservation standards for energy efficient buildings.

Grays Harbor in western Washington became the first county to adopt codes which incorporate the standards. A city in that county, Elma, also adopted a complying code. (Elma sponsors an annual Slug Festival but certainly cannot be called sluggish about energy conservation.) Up in ski country, near the Canadian border, the city of Republic also adopted the standards.

Previous adopters include the Washington cities of Tacoma, Stanwood, and McCleary. *–SE*

Amendments adopted: goals study, Zone 2

Two amendments, one to its power plan and one to its fish and wildlife program, have been adopted by the Northwest Power Planning Council. Both were considered nonsubstantive.

The Council adopted an amendment to Section 201 and 1504 (Action Item 36) of its Columbia River Basin Fish and Wildlife Program. This transfers funding of the goals study to the Council and modifies some procedures. It does not affect the substance of the study which is designed to assess salmon and steelhead losses caused by hydroelectric development and to set goals for restoration of these fish.

The Council also changed the model conservation performance standard for residential buildings in climate zone 2. The action raises the annual energy budget from 2.6 kilowatt hours per square foot for a single-family home to 3.2. This change reflects a technical correction on the cost of wall insulation, one component of the standards. The Council also corrected a typographical error in the 1983 plan which showed the Zone 3 budget as 3.1. It was corrected to 3.2.

–DM

Local government officials addressed the Council on Bonneville's code reimbursement policy for the model conservation standards. From left are Dale Horton, Montana; Lynn Carmichael, Washington; Tom Townsend, Idaho; and Larry Tuttle, Oregon.

Since you ask . . .

wish list for the new power plan

When the Northwest Power Planning Council adopted the region's first blueprint for a low-cost energy future in 1983, the Council was determined that the plan wouldn't become another document gathering dust on the shelf. Then-Chairman Dan Evans asserted that the first Northwest Conservation and Electric Power Plan would "guide the Northwest to a better electric energy future." Now, almost two years later, the changing needs of the region are being weighed as the Council gears up to adopt a new power plan. *Northwest Energy News* asked a number of people who worked on the first plan to share their hopes and expectations for the upcoming plan.

by Susan Skog

"We've got all kinds of resource uncertainty, and I hope the Council comes to grips with it."

WALT POLLOCK

Bonneville Power Administration assistant power manager for resources, planning and acquisition

Pollock believes the first regional power plan was valuable because it combined sound analysis with an ordered, logical approach to decision making. It also reflected creative thinking, he adds. "I would hope that these three would be the cornerstones of the next plan," he says.

The assumptions which support the energy resources targeted by the Council to meet future loads are critical, according to Pollock. "We've got all kinds of resource uncertainty, and I hope the Council comes to grips with it." Uncertainty, he stresses, still plagues sources of power such as small hydro and conservation because more information is needed on their cost, how long it takes to develop them, and how much power they can be depended upon to produce.

He also hopes the Council can act as a catalyst to "bind the region together, rather than fracture it." When the Northwest Power Act was passed, according to Pollock, the prevailing thought was that lawsuits would be a thing of the past, but now there's more litigation than in 1980.

He feels the Council is off to a good start in bridging the gap between the region's disparate interests with its recent meeting with public utility commissioners to discuss how the future will unfold.

▶

RALPH CAVANAGH

Natural Resources Defense Council senior staff attorney

Cavanagh says the possible loss of WNP plants 1 and 3 adds greater urgency to the Council's task to identify all the cost effective conservation available in the region. He urges the Council to study the Coalition petition because it details a plan which will allow the region to survive the loss of the two nuclear plants and still be in a good position to avoid construction of more costly resources.

In addition to exploring new conservation technologies, Cavanagh believes the Council should continue to examine the possibility of Bonneville increasing the portion of the direct service industries' load which is interruptible. "If we can make parts of it (DSI load) interruptible instead of adding a new coal plant, it makes everyone better off."

> *"If we can't make what we've got in the present plan work, then no one will care how much we can expand the portfolio."*

EDWARD SNOECK

City council member from Cut Bank, Montana

Snoeck wants the Council to place a moratorium on the model conservation standards until the Residential Standards Demonstration Program homes have been metered for at least two heating seasons. Insulating homes is a great idea, he feels, but he advocates making it voluntary. "Don't force people to do something and then expect them to pay for it," Snoeck says.

ELLEN KNIGHT

Montana League of Women Voters energy chairperson

Knight urges the Council to educate the public about the value of conservation in extending the surplus. She also asks the Council to remain flexible on the model standards and to take a "realistic approach" in their application. Finally, Knight stresses the need for public participation in the new plan, especially for those who have found it difficult to participate actively in the implementation of the 1983 plan.

DIANA SNOWDEN

Pacific Northwest Utilities Conference Committee (PNUCC) executive director

Snowden feels the biggest issue facing the Council is management of the region's surplus power. She cautions the Council to re-think what she sees as a hands-off approach to the surplus sales problem. It's "very shortsighted" for the Council as the region's planning entity to ignore these sales because of antitrust implications, Snowden says.

She feels the Council is in an ideal position to help analyze how the surplus should be sold out of region and to create an environment for such a sale. The Council is ideally positioned, she believes, to work with the region's public utility commissions and organizations on the surplus problem.

On the other hand, there's another surplus sales issue PNUCC would just as soon the Council backed away from — the question of limiting access to the Pacific Northwest-Southwest Intertie. Any policy statement or regulations that restrict the sale, which would be based on existing resources, is "inherently premature," Snowden says.

Finally, PNUCC hopes the Council will scrutinize carefully the resources for its new plan to determine whether combustion turbines, conservation and other resources can provide peak energy as projected in the last plan. "The closer we get to the end of the surplus, particularly with the uncertainties over WNP 1 and 3, the more it's necessary that those numbers be realistic and accurate."

MARC SULLIVAN

Executive director of the Northwest Conservation Act Coalition

Sullivan believes the top priority should be to make conservation programs in the original plan work instead of expanding the resource portfolio. "If we can't make what we've got in the present plan work, then no one will care how much we can expand the portfolio."

Last November, the Coalition issued a petition outlining how the original plan could be perfected. Among other things, the petition called for the Council to remove Washington Public Power Supply System nuclear plants (WNP) 1 and 3 from its list of "assumed resources." The original plan treats the plants "as if they were as reliable as Grand Coulee," Sullivan says. "That's not the real world."

The Council "could do themselves and the region a good turn," he asserts, by getting an independent estimate of the costs to complete the two plants and the decommissioning, operation, maintenance and other costs.

With proper incentives, Sullivan says, conservation can be relied upon to meet the region's future energy needs. As one example, the Coalition wants an incentive program to encourage more efficient lighting in the commercial sector. It also wants Bonneville to pay the full cost of weatherization in existing homes as opposed to the partial financing called for in the current plan. The petition also urges the Council to pursue appliance efficiency standards. Sullivan feels incentives should also be woven into the model conservation standards to ensure their survival. "It's no secret they're in trouble. The key to breaking the political logjam is to redistribute the costs."

STEVE HICKOK

Bonneville assistant administrator for conservation

Hickok hopes the upcoming plan will reflect the capabilities and responsibilities of others — from private utilities to local governments — to develop conservation. "In the first plan, the Council looked at BPA as a bank that anyone could come to for any purpose," he feels.

He also urges the Council to "bite the bullet" and look at adopting appliance efficiency standards. California's recent efforts to implement such standards, Hickok believes, will aid the Northwest's ability to include such standards in its model conservation standards.

NANCY McKAY

Association of Washington Cities and Washington State Association of Counties energy project coordinator

McKay says that topping her "wish list" for the upcoming plan is the desire that the Council build more consensus among utilities and local governments on how conservation programs and the model standards should be treated. McKay's second desire is for the Council "to put the meat on the bones" of conservation programs already contained in the original plan. The Council needs to be more specific about stating "what needs to be done, by whom and by when," she says. "I'm looking for more concrete direction for the region in conservation programs."

Local government officials hope the next plan will also give them clear direction on how alternate plans could achieve savings comparable to the model conservation standards, she adds. McKay urges more consultations with the Council, local governments and utilities.

DAVID GOLDSTEIN

Senior staff scientist for the Natural Resources Defense Council

Goldstein seconds the Coalition's idea about incentives to promote more conservation, particularly for more efficient appliances, in the commercial and industrial sectors, in weatherization of existing homes, and in the use of model conservation standards for new homes. The Council needs to ask itself, he says, how serious it is about conservation. "We have a number of promising conservation options not included in the last plan that could be included in the next plan if we want to get serious about the principle of minimizing costs."

Goldstein feels the Council is headed in the right direction, but that the current plan is "unreasonably weighted toward residential conservation when in reality, the conservation potential is distributed more evenly over all the sectors."

CHRIS CARLSON

Kaiser Aluminum Chemical Corporation's regional vice president for public affairs

Carlson, a former Council member, says the aluminum company will zero in on conservation as the issue it wants the Council to pursue aggressively. He hopes the Council will reaffirm its commitment to the acquisition of cost-effective conservation as the top priority for Bonneville. Specifically, he adds, "We think and hope the plan will direct BPA to proceed diligently with acquiring industrial conservation from the direct service industries."

In December, Kaiser unveiled a proposal which looked at the installation of more energy efficient pots at its Mead, Washington smelter coupled with gradually increasing purchases of interruptible power from Bonneville. In exchange for its industrial conservation efforts, Kaiser hopes it would receive billing credits from Bonneville.

Kaiser is confident its industrial conservation steps could produce 170 megawatts of "firm, predictable, quantifiable and verifiable power," Carlson says. "This is the kind of proposal that ought to be sanctioned by the Council. It's clearly a win-win situation for the region and industry."

> *"This is the kind of proposal that ought to be sanctioned by the Council. It's clearly a win-win situation for the region and industry."*

RANDY BARCUS

Washington Water Power Company senior economist

Barcus feels an additional action plan which covers a longer period than the current two-year action plan is a better approach to securing a low cost energy future. "Otherwise, we're lost in a maze of short-run decisions and we'll never make any long-run decisions."

His company will monitor development of the new plan because the utility is managing many energy resources targeted in the plan, he says. Barcus feels the utility can share its experiences and concerns with the Council. "Washington Water Power is intertwined with the region" and sees its own planning process as a smaller version of the Council's plan.

MERRILL SCHULTZ

Director of the Intercompany Pool, a utility organization

Schultz says he will be operating from a clean slate during the upcoming plan development and won't advocate specific actions or the addition of certain energy resources. On the other hand, he wants the Council to deal with the region's energy needs in what he calls a more realistic light. Schultz cautions the Council not to bank on "things that may not come true." He stresses the conservation and generating resources in the plan must be attainable, particularly the options concept.

His organization will again monitor the Council's treatment of combustion turbines, conservation and small hydropower. Schultz continues to be concerned about the region's ability to rely on power from combustion turbines, to develop as much conservation as the Council originally forecast and to acquire small hydropower given major concerns over fish and wildlife.

While he acknowledges there are hurdles ahead — such as developing the options concept — Schultz has faith in the planning staff to "come up with a mixed program for the future that is indeed cost effective."

TACOMA:

Confessions of An Early Adopter

> *"Most of the customers who buy these homes are happy customers."*

by Jim Nybo

That was the assessment of Mayor Doug Sutherland of Tacoma, Washington. His city was the first entity in the region to adopt the Northwest Power Planning Council's model conservation standards, which set forth energy efficiency levels for new residential and commercial construction.

As the first adopter, Tacoma has found itself in the spotlight as other communities in the region watch the city's efforts closely. What has it been like to be the pioneer?

Mayor Sutherland answered that question in part with a status report at a Council meeting earlier this year in Seattle, Washington. The standards were adopted by the city in November 1983 and have been in force as building codes since last June. They have been a utility service standard in Tacoma City Light's service territory since October.

Mayor Sutherland pointed out that the four essential facets of Tacoma's success are training and education, technical assistance, builder incentives, and the Super Good Cents marketing program.

Although Tacoma's code offers a designer various ways to comply, most builders (68 percent) chose a straightforward prescriptive path which includes R-38 ceiling insulation, R-19 walls, R-30 under floor, an insulated door, triple-glazed windows, and an air-to-air heat exchanger.

Tacoma's enforcement process has relied heavily on working closely with builders, usually prior to permit application, to provide specific information and technical assistance. The plan review phase is an important opportunity to check design details, such as air-to-air heat exchanger specifications, to avoid installation problems. Tacoma has found that a builder's first home is difficult in terms of inspections and understanding the required materials, but as builders gain experience, the program appears more successful than problematical.

Mayor Doug Sutherland, right, and Jacob Fey, below

On-site inspections are also an important aspect of Tacoma's enforcement. The first 20 homes completed required an average of about four inspections. Tacoma inspects for energy compliance at four stages of construction: footings, framing, insulation, and final.

Tacoma officials monitor all costs, and they estimate that thus far the enforcement costs per dwelling unit range around $170. Mayor Sutherland said they expect enforcement costs to stabilize at a lower level as they gain more experience. Jacob Fey, Tacoma's energy conservation coordinator, who accompanied the Mayor, told the Council, "Enforcing the standards has added one additional inspection visit and has lengthened each of the traditional inspections because of what needs to be looked at."

As the first adopter, the city is expected to face more "bugs" in the system then those who follow. Some of the typical problems Tacoma has observed are installing windows that do not meet the specifications, improper installation of air-to-air heat exchangers, and lack of thorough caulking and sealing.

Approximately 500 persons have attended Tacoma's training programs on the standards. Fey felt the initial training dwelt too much on state-of-the-art construction. "Future training," he said, "will emphasize minimum paths to compliance, and will focus on specific construction details of buildings built to the standards. The design flexibility in the standards allows the builder to build a home at the least cost and still meet the performance standard."

Mayor Sutherland also discussed builder attitudes. "As the real reason for the standards becomes apparent," he said, "the builders are becoming excited about it because what it basically does is require them to build a quality product . . . Builders have found that if the quality of their product is good, the standards are not difficult to meet. And they have found that the additional cost of $1.50 to $2.10 per square foot to meet the standards is within reason."

Oregon Council Member Roy Hemmingway expressed his appreciation for the city's pioneering spirit in being out front in a difficult experiment. "A lot of people," he said, "felt that this was too great a leap to take at one time, but the city of Tacoma has shown that it can be done and that it is practical." ■

Unfinished Business

Washington's Mothballed Nuclear Plants 1 & 3

Steve Engel photo

"Preservation is our main product these days," says Art Kohler, program director at Washington Public Power Supply System Nuclear Project 3 (WNP-3). "Most of the creators and builders have moved on," says Dewey Hulbert, WNP-3 engineering manager. "What we have now are the mother hens, the ones who enjoy providing vigilance and protection, who like to polish up and maintain systems."

These people are protecting an investment of $3.8 billion — the combined construction costs to date for WNP-1 and WNP-3, not including interest. Plant 1 is 63 percent complete and Plant 3 is 77 percent. Some viewpoints (not all) hold that finishing these plants could prove to be the region's cheapest investment in new sources of electricity — when new electricity is needed. Most people who feel that way estimate such a need might arrive in ten to 15 years. Completing the plants would take about five years and at least $1.5 billion each. (But a number of factors could drive up the cost. See box, "Some Major Moths," about Northwest Power Planning Council efforts to determine costs and problems associated with a long delay in construction.)

Meanwhile the plants sit. And wait. But more than 60 craftsmen and mechanics don't wait. They follow daily instructions from a computerized preventive maintenance program — 2,000 tasks each month. Dozens of quality control people evaluate this preservation program, inspect it and augment it. Some 200 engineers design, draw and document the complex pieces of these plants, in preparation for the day when construction may resume.

A 16-employee licensing staff works with regulatory bodies. Accountants close out procurement and construction contracts and keep up payroll and purchases. Information people talk to the media; security guards patrol the grounds. Other

by Steve Engel

staff provide materials storage and fire protection. Managers and administrators oversee all this. Clerical people support it.

In all, about 370 people work at each location to keep the plants ready — physically intact and with essential documents in order — if the call comes to finish building them.

During 1984 the two plants incurred costs of $152 million — $25 million for WNP-1 and $127 million at WNP-3. More than a fourth of the money went to pay off and close out contracts. The 1985 total will drop to $104 million — much of it to conclude contracts, according to Chuck Carlyle, assistant to the managing director of the Supply System.

Future budgets depend on final decisions about how long the delay will last, Carlyle explains. When all contracts are finally paid off, preservation-era annual budgets for each plant could range from $12 million to $36 million — depending on how much design and licensing work go on. Staffing levels would drop to 150 per project with a "minimum preservation" program involving maintenance only; they could rise to 400 per project for more extensive efforts.

Some major moths

A recent issue paper by Northwest Power Planning Council staff assesses efforts to preserve equipment and structures at Washington Public Power Supply System's Nuclear Plants 1 and 3. The paper also examines risks associated with construction delay to determine if the plants can be completed and operated when the region needs their output. The issue paper ("WNP-1 and WNP-3 Planning Assumptions") finds some elements of mothballing work fine. Other areas hold uncertainty for the future of these plants, which represent a construction investment of $3.8 billion.

The issue paper does not draw conclusions about cost effectiveness of the plants or compare them with other resources. It outlines information that the Council staff will use to make that analysis later this spring.

The most significant uncertainties concern the costs of meeting possible new regulatory requirements, questions about Plant 3 seismic design, deterioration of equipment and structures, and the availability and cost of financing. Other uncertainties include maintaining the plants' construction permits and their eligibility for operational licensing, preservation of equipment and structures, costs of completion, the possible impact of legal settlements, loss of engineering continuity, decommissioning costs, future availability of nuclear materials and equipment, and questions concerning plant capacity and expected operating life.

"Some of these issues are technical problems rather than real obstacles," says Edward Sheets, executive director of the Council. "For example, decommissioning costs could range from $100 million to $300 million — but a sinking fund could be adjusted to take care of the higher figure without having a large impact on rates. Some events, like an inability to obtain the operating license, would kill the project. New regulations might add to the cost of the plant but not affect the license."

Among the most uncertain areas, Sheets says, are the cost and rate impact of loan risk premiums, future modifications mandated by the Nuclear Regulatory Commission, and the potential expense of upgrading seismic design at Plant 3. "And, of course," Sheets adds, "the value of the energy from these plants could drop during the delay if new technologies develop, or if conservation takes hold."

At a recent Council meeting in Seattle, Chairman Chuck Collins said, "I suspect there are some who consider the Council schizophrenic or worse because it is able to promote conservation aggressively on one hand and yet keep potential options open on a nuclear plant. I don't see this conflict. Conservation and nuclear plants both deserve our best assessment of the facts available and our best judgment of the risk." *–SE*

Left: Unfinished WNP-3 turbine building in foreground, with terminated WNP-5 cooling tower and reactor shell. Below: Exterior of WNP-1 at Hanford.

WPPSS photo

In the event that Plants 1 & 3 are ever called on to breathe steam and generate electricity, great care has to be taken to protect their dormant parts.

"If we're told to stay in the preservation mode five or ten years," Hulbert says, "we'll probably need to do some capital intensive work early on to seal the plants up more thoroughly." A separate $12.8 million proposal for Plant 3 would complete the concrete dome on the reactor building, close up holes left for construction purposes, upgrade fire protection, dehumidify the premises and install heating and ventilation.

In the event that Plants 1 and 3 are ever called on to breathe steam and generate electricity, great care has to be taken to protect their dormant parts.

At Hanford, in dry eastern Washington, consulting engineers say that Plant 1's materials show almost no rust. The dust finds few gaps to invade; electrical panels are all taped shut, and there's not much equipment on site. The builders of Plant 1 had almost a year's warning to close the openings and cover the valuables. But at Plant 3 in Satsop, in the words of Art Kohler, "It was almost a situation of drop the wrench and walk away." The decision came down with surprising suddenness, leaving walls and roofs unfinished, metal and rubber and equipment exposed.

But the Supply System has worked hard to control the preservation problem at Plant 3 — particularly because of everlasting mists and rains that bathe the Grays Harbor County site with 70 inches of serious dampness each year. Joe Burn, director of engineering for the Supply System, points to a study that gives even the most splashed-upon structural metal at the plant 16 years before it suffers unacceptable damage. "Corrosion coupons" — metal tags used to indicate corrosion rates — show almost no degradation in protected areas.

At Plant 3, a staff of 60 applies an extensive preservation program to keep the wetness from chewing away at $400 million worth of equipment. Don Mazur, managing director of the Supply System, calls the maintenance program "a highly disciplined, rigorously developed effort." Plyboard and plastic sheeting plug gaps in the outer walls. Pumps and motors and electronic parts reside under shrouds of plastic, sealed with duct tape. Thousands of light bulbs glow from beneath the plastic tents, acting as little heating and drying units. Critical elements are regularly turned and greased, misted with preservatives or filled with inert gasses; they are calibrated and adjusted, inspected and tested, cleaned and repaired.

The same care is given to Plant 1, where the program was first developed — although fewer maintenance staff are required because there's less equipment.

Interior of a holding tank at WNP-1. Preservation efforts are designed to keep corrosion from affecting sensitive equipment in remote areas of the plant.

WPPSS photo

> **"Preservation of this kind is not a science, and it doesn't really have a history."**

"What the Supply System is doing is well on the comfortable side of adequate," according to Jim Lewis of the Bonneville Power Administration. Lewis, assistant to the Administrator for Supply System programs, adds, "This is a subjective judgment, you understand. Preservation of this kind is not a science, and it doesn't really have a history." He believes, however, that "the process we're going through at Plants 1 and 3 will keep them clean and dry enough so that we shouldn't have any doubts about their condition for at least ten years."

Don Mazur stated at the Council's February meeting that "With the proper programs and diligence, there's no reason we can't maintain the physical structures and equipment of these plants indefinitely."

In order to preserve essential permits and licenses, the Supply System takes an active role in developing new Nuclear Regulatory Commission (NRC) policies concerning long-term preservation. "There's a void in the regulatory area," says Mazur. Not only does the NRC lack an explicit preservation policy — it hasn't established a procedure for approving anyone's plan. There are no hoops for a mothballed nuclear plant to jump through. NRC policy on maintaining licenses makes no special requirements for a long-term suspension of construction.

"We're participating with the NRC in the development of these policies," Mazur says. "We don't intend to hang back and wait for events to take their own course."

The Supply System and Bonneville, which owns most of the plants' output, are trying to negotiate an agreement with the NRC that would guarantee construction permits for up to ten years — and would maintain the ability to get operating licenses. The Supply System is seeking "readiness review" of existing structures and equipment to ensure that they conform to NRC licensing criteria.

Any agreement, however, would not exempt the projects from design and equipment changes mandated during preservation or renewed construction. At least 14 new NRC regulations are slated for adoption in the near future. Only a few would require changes to Plants 1 or 3, and Supply System personnel say they have budgeted for the "known possible modifications" most likely to be required.

Electrical panels at WNP-1 wrapped in plastic.

There are, however, some crucial, and potentially costly, questions about the seismic design of Plant 3. The Juan de Fuca crustal plate meets the North American plate along the nearby coast; the adjacent surfaces of the two plates lie 18 miles below the plant. At the time Plant 3 was begun, the best evidence did not suggest much earthquake potential from these plates. Now some geologists maintain that plate interaction may create quakes exceeding those anticipated in the original plant design. Similar plate interaction elsewhere in the world — Japan, for example — produces frequent earthquakes, often of great magnitude. The Washington coast, however, has seen little earthquake activity historically. The Supply System is conducting a two-year, $2 million geological study to find out what kinds of quakes to expect, how the ground will behave if one strikes, and how well the plant structures will hold up under those stresses. No one has yet determined the cost of reinforcing, redesigning or replacing parts of the project, if necessary. Such work could have a significant impact on cost effectiveness.

Preservation is paired with preparation at Plants 1 and 3. In fact, the bulk of staffing at Plant 1 is devoted to completing the engineering, the detailed drawings and the documents that must precede construction. Bonneville strongly supports this engineering effort, according to Jim Lewis. "In any other industry, engineering is completed before construction begins," he says. "With nuclear plants, it seems, they design as they go. Only 50 to 60 percent of the engineering work has been done at Plant 1."

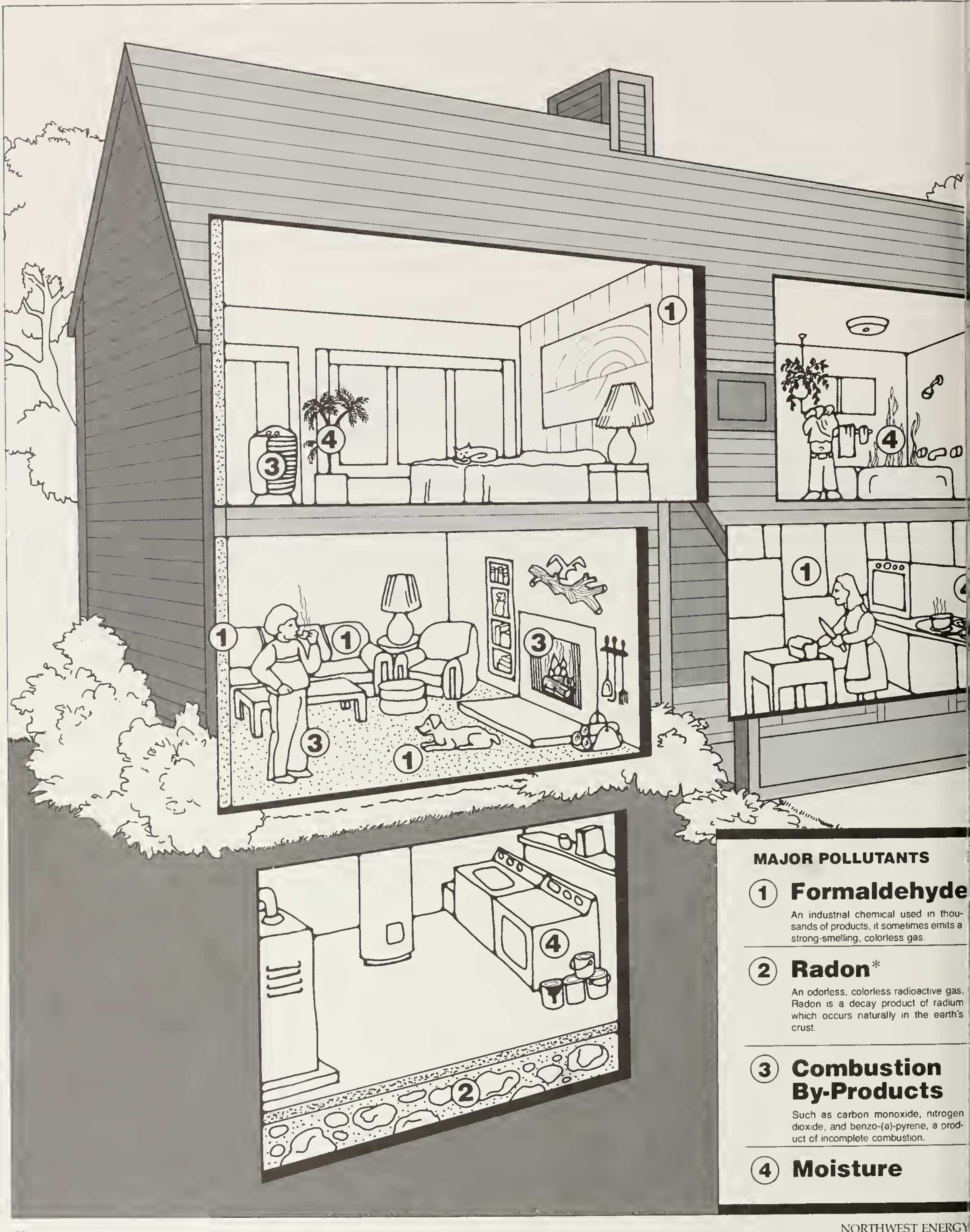
Lewis adds that "Bonneville believes the ratepayers can be best protected by having a capped cost contract, where the contractors give a fixed bid and assume some of the risk. But without the certainty they get from good, complete engineering work, the contractors can hardly be expected to leave out a contingency clause."

Don Mazur asserts that "This delay has been a good thing in many ways. It gives us more years of technical knowledge — about seismic matters, safety procedures, how these particular designs perform under operating conditions. Being down is an advantage, an opportunity. We're not pressed with the immediate need to make certain decisions — other plants can learn for us how to make changes, how to test those changes.

"What we want to do is make damn sure there's no big surprise when we get to start-up." ■

WNP-3 unfinished reactor building dome.

WPPSS photo/Steve Engel photo



MAJOR POLLUTANTS

① **Formaldehyde**

An industrial chemical used in thousands of products, it sometimes emits a strong-smelling, colorless gas.

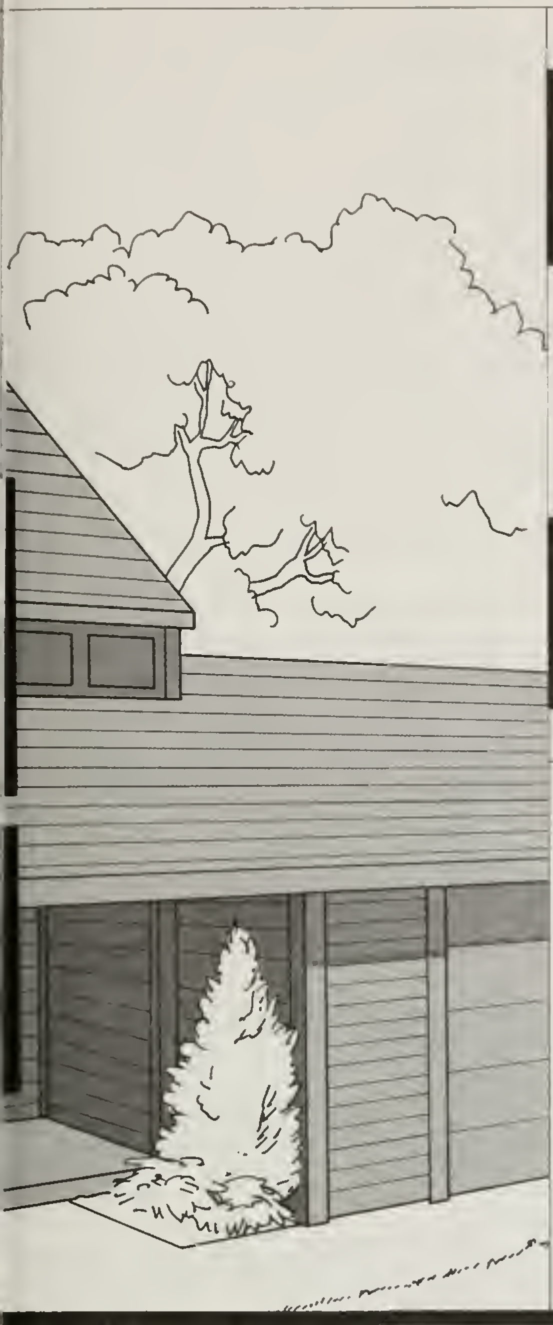
② **Radon***

An odorless, colorless radioactive gas. Radon is a decay product of radium which occurs naturally in the earth's crust.

③ **Combustion By-Products**

Such as carbon monoxide, nitrogen dioxide, and benzo-(a)-pyrene, a product of incomplete combustion.

④ **Moisture**



TIGHT & ALL RIGHT

Indoor Air Quality in Energy-Efficient Homes

by Ruth Curtis

A major landmark in U.S. environmental history was the 1971 passage of the Clean Air Act. This Act focused national attention on the air people breathe; it helped regulate emissions from industries and cars; and it reduced smog in cities.

But it is becoming clear that air pollution is not just a problem of cars, smokestacks, and city skylines. It also affects the air in homes and offices. In fact, environmental experts are now saying pollutant concentrations can be higher indoors than outdoors. With Americans spending 80 to 90 percent of their lives within buildings, the composition of indoor air can be a serious problem.

▶

SOURCES	EFFECTS	TO REDUCE EXPOSURE
Urea-formaldehyde foam insulation, particle board, plywood, furniture, carpets, upholstery, etc.	Nose, throat, and eye irritation, possibly nasal cancer.	Testing for formaldehyde gas is a fairly simple procedure. The source should be removed when possible and replaced with materials low in formaldehyde such as low-formaldehyde particle board. Seal with a latex coating and/or increase the ventilation.
Soil and rock beneath the home. It eventually disintegrates in the atmosphere, but if trapped in a building, its concentration can build to the point where it is a health hazard	Lung cancer. (Radon is believed to cause 5-20% of all lung cancer deaths).	Radon measuring devices are commercially available. If present, keep it out by sealing cracks and other openings in floor, improve the ventilation (especially in the crawl space). If necessary, depressurize the area under a slab foundation.
Unvented gas and kerosene heaters and stoves, tobacco smoke, and wood smoke.	Allergic inflammation of nasal membranes, eye and nose irritation, lung cancer, emphysema, heart disease. Some by-products are fatal in very high concentrations.	Monitors are available for some by-products. Avoid smoking inside house or smoke near an open window, vent gas and kerosene appliances outdoors, block leaks in wood stove pipe.
Steam and humidity from cooking, bathing, plants, unvented dryers, etc.	Foggy windows, growth of mold and mildew	Ventilate at the source with bathroom and kitchen fans.

"The major problem with radon is knowing where it is a problem. It comes from soil and bedrock but its concentration varies from location to location. While it is easy to test for, there has been no survey to pinpoint the areas where the residents should be concerned. This is changing in the Northwest. The Bonneville Power Administration, as part of its expanded weatherization program offered to the public through local utilities, is offering optional radon monitoring for every home weatherized. Phil Thor, who is involved with the program, expects that most home owners will request it. "The monitoring will be used to get a clearer picture of where radon problems are in the region. This information will be provided to the public periodically."

Linda Sullivan illustration

According to Dr. Ken Saxton, director of California's Indoor Air Quality Program, the quality of the air indoors may be deteriorating due to the lower ventilation rates in houses meeting current codes (they are built tighter now), and the greater use of combustion appliances, such as wood stoves.

The Northwest Power Planning Council recognized indoor air quality concerns when it developed its model conservation standards — building standards designed to produce even tighter, energy efficient homes. The standards specify a minimum ventilation rate the home must meet. Because this rate is produced by mechanical means, rather than hit-or-miss factors such as wind, and leaks around windows, these homes are assured of better ventilation than many conventional homes built to current code.

The amount of pollution within a building depends on three factors: the strength of the source, the ventilation rate of the building and the rate the pollutant is removed from the air by settling or chemical reaction. The most important of these factors is the source of the pollutant. If there is no source in the home to start with, there is no need to be concerned with getting rid of it.

Pollutants can enter a home from a variety of sources. These include the materials used to build the home, the appliances and furnishings within it, the cigarettes the owner smokes, and the showers the family takes every morning. Energy efficient homes and conventional homes do not differ significantly in their sources of pollutants (the occupants of both homes may smoke or have furniture emitting formaldehyde gas).

All homes have leaks through which air escapes or enters. Leaks provide much of the ventilation in a conventional home. Unfortunately, they also let the home's heat escape and so waste energy. In an energy efficient house, these leaks are dramatically reduced, thus saving a substantial amount of energy. But this does not necessarily mean the ventilation rate will also be reduced. Mechanical systems can and should be installed which will ventilate the house, without wasting its heat. Some earlier energy efficient homes which did not have these systems had problems with indoor air pollution. These problems stem from improper design and can be avoided.

A home built to the standards does not depend upon random, uncontrolled air leakage to provide ventilation.

To meet the Council's model conservation standards, a home must have a minimum ventilation rate of 0.6 air changes per hour. (One air change per hour means that once every hour all of the air in the house will be exchanged for outside air.) The 0.6 standard is equal to the average rate of homes built since 1977 using conventional methods. But, while 0.6 is the average rate, conventionally built homes have rates ranging from near zero to two air changes per hour. Although there is no national standard for ventilation in a home, Dr. Harvey Sachs, one of the nation's experts on indoor air pollution, considers 0.3 air changes per hour the absolute minimum acceptable rate.

And within a conventional home, dramatic fluctuations in the rate occur frequently because ventilation depends both on atmospheric conditions and the behavior of the occupants. On still days with warm temperatures, or if doors and windows stay tightly closed, the ventilation rate may approach zero and pollutants present will tend to concentrate.

A home built to the standards does not depend upon random, uncontrolled air leakage to provide adequate ventilation. Instead, it uses a mechanical ventilation system to provide the house's occupants with fresh air. The most common of these systems is an air-to-air heat exchanger which works by exchanging stale indoor air for fresh outdoor air and by moving air through rooms in a house. It is energy efficient because it preheats the cold, incoming air stream by using the heat from the house air being exhausted.

Greater ventilation rates can be directed to those rooms, such as kitchens and bathrooms, that particularly need it. Heat exchangers have been used extensively in homes in Canada, Sweden, and France, and in commercial buildings throughout the world. They are a relatively new technology in houses in the United States.

Another system, used frequently in Sweden, recovers heat from exhaust air by using fans to pull warm indoor air past heat pump coils to preheat water. A third system, also used in Sweden, exhausts stale air via simple exhaust fans, while fresh air is introduced through wall vents located in each room.

Because these systems ensure a minimum, constant level of ventilation while controlling the home's loss of heat, the indoor air quality is no worse than that caused by current building practices. And, in most cases a home built to the model conservation standards may actually have better indoor air quality than homes built using conventional construction practices.

For more information on indoor air quality, see chapter 5 of the Model Conservation Standards Reference Manual (available from the Council's central office). ■

A DILEMMA *in* COMMON

Fish Disease in the Columbia Basin

by Carlotta Collette

This past January, a routine sampling of tissue from upriver bright fall chinook that had been spawned at the Bonneville Hatchery on the lower Columbia, showed evidence of infectious hematopoietic necrosis (IHN) virus. IHN is one of the more severe diseases in steelhead trout in the Columbia River Basin, but never before had it been detected in upriver bright fall chinook. To limit the spread of the virus, 1.7 million eggs from three days' worth of spawnings were chlorinated and buried. Not having sampled tissue from all of the spawning fish, hatchery officials were only able to guess that the disease was restricted to the few fish that tested positive. Rich Holt, who oversees operations at the Bonneville Hatchery for the Oregon Department of Fish and Wildlife, is crossing his fingers. "We just hope that the remaining 12 million eggs in the hatchery are OK," he said.

"The problem at the Bonneville Hatchery is just the most recent one to hit the press," asserts Jim Warren, executive secretary of the Pacific Northwest Fish Health Protection Committee (see related story).

Eggs (approximately 5,000) from one female steelhead trout.

Carlotta Collette photos

Most fish disease specialists agree that the water, like the fish themselves, can carry the bacteria and viruses that trigger diseases.

"A lot of hatcheries have problems. The Dworshak National Hatchery up on the Clearwater in Idaho has had major outbreaks for the past several years. They're conducting some of the most advanced research on it, too."

The Dworshak Hatchery is set on a peninsula that juts out into the Clearwater River where it is joined by its North Fork. From the air, the sprawling hatchery seems to hunker down practically in the shadow of the largest and highest straight-axis dam in the United States, the 717-foot tall Dworshak.

Because the Dworshak Dam blocked all migration of steelhead trout on the North Fork of the Clearwater, the Army Corps of Engineers, the U.S. Fish and Wildlife Service and the State of Idaho agreed a hatchery was needed below the dam as compensation.

Dworshak Hatchery is now the largest steelhead producer in the world. Each year, some 2,000 steelhead "couples" produce an estimated 8 million eggs. In an average year, 2.5 million smolts are released back into the river. Of the remaining 5.5 million, some are outplanted to adjacent streams and rivers and others are transported to a hatchery further up the mainstem of the Clearwater. But, in recent years, the majority of the fish have been lost to diseases, mostly IHN.

Joe Lientz, Fish and Wildlife Service pathologist at Dworshak, counts up the losses. "In 1983 we were almost completely wiped out. We lost 98 percent of our steelhead eggs and fry. Last year we lost between 65 and 70 percent. We figure our average losses now are around 30 percent." As a rule, he explained, the hatchery produces enough eggs to accommodate such losses.

The odds of detecting the virus and confining its spread have gone up at Dworshak since they began culling out pairs of fish. In most hatcheries the eggs of one female (between 5,000 and 6,000 per fish) are fertilized by several males. This practice encourages a broader genetic distribution in the offspring. It also encourages contamination of larger numbers of eggs.

By culling pairs and keeping them separated until tissue samples can be cultured for the disease, eggs from fish that carry the virus can easily be destroyed, and non-infected eggs can go on to develop into healthy smolts.

Dworshak Hatchery also raises chinook salmon, with a goal of releasing 1.8 million each year. To get that many survivors the hatchery starts with 2.3 million. "We have a different problem with the chinook," Lientz explains. "Our losses with them are usually due to bacterial kidney disease (BKD)."

"BKD infected fish die in hatcheries, die during migration to seawater, die during their life in the ocean, or die as adults in their home waters where they're spawning," says Warren. "This disease needs a fully integrated plan that attacks it on all fronts throughout the spawning and rearing cycle of hatchery fish. I don't believe it would be inappropriate to say you could double hatchery reared spring chinook if you could satisfactorily control BKD."

BKD and IHN are the two diseases that top a list of 22 that were identified by the Fish Health Protection Committee as the most serious health problems confronting anadromous fish in the Basin. Usually, IHN affects steelhead and BKD is most

Feeding time for young chinook salmon in hatchery raceway.

"Hatcheries in the Columbia Basin
are like huge feed lots;
parasites tend to bloom there."

serious in spring chinook stocks. When there is a crossover, like the one that occurred at Bonneville, anxieties among hatchery personnel soar.

A big part of the problem is the water itself. It is usually routed from the various rivers in the Basin, through the fish stocks and back again into the rivers. While no one is absolutely certain, most fish disease specialists agree that the water, like the fish themselves, can carry the bacteria and the viruses that trigger the diseases.

Another factor that seems to fuel the prairie fire of infectious disease is the proximity of hatchery fish to each other. Millions of tiny fish spend their first and sometimes second years crowded into concrete raceways. Fish population density causes stress. The stress renders the fish more vulnerable to pathogens. "Hatcheries in the Columbia Basin are like huge feedlots," Warren maintains. "Parasites tend to bloom there."

Once they are ready to be released, many of the migrating fish are outplanted to other subbasins or barged downriver by the Army Corps of Engineers. Any contaminants are readily disseminated throughout the entire reach of the Columbia and even into the ocean. The seriousness of the situation is clear to Lientz, who feels that "every hatchery in the drainage has been exposed to some fish diseases." Warren concurs. "It's almost impossible to calculate what fish diseases are costing us," he adds, "but I'd guess that about 30 percent of all fish hatchery budgets go towards fish health."

While it certainly appears true that fish diseases are endemic to the entire Columbia River Basin, discussions of the problem often settle into a steady assault on the Hagerman Valley, far up the Snake River in southern Idaho. Often called the valley of 1,000 springs, the Hagerman is an ideal place for raising rainbow trout.

"Rainbow trout have been raised in the Hagerman Valley since before most of the other hatcheries existed; before we knew how to prevent, control or manage fish diseases," asserts Dr. Robert A. Busch, whose Clear Springs Trout Company is one of the many hatcheries that take advantage of the constant flows and near-perfect water temperatures of the springs that cover the walls of the canyon cut by the Snake. "We produce more pounds of fish here than in the entire remaining Columbia River Basin combined." Such intensive production can mean more diseases.

Dave Ransom raises salmon commercially in Oregon, and he's upset because the state of Idaho has fewer guidelines for limiting fish diseases than Oregon has. He thinks Idaho, at the headwaters of the Snake River, should be at least as rigorous as the other states, since its discharged water flows through a large part of the rest of the Basin.

"Oregon has very strict fishery regulations, and we all benefit from them," he notes. "Idaho doesn't have any. Unless everyone plays by the same rules it'll be ludicrous."

Ransom tells horror stories of disease outbreaks in both the public and private hatcheries in the valley. And Warren, attempting to mediate the conflicts, admits that fish diseases can be a problem in southern Idaho. "But, don't call it the Idaho trout problem," he urges. "Commercial trout hatcheries have very different objectives from those of the fisheries resource agencies. They have their problems too, they're just different problems."

Monty Richards is chief of fisheries for the State of Idaho, and if anyone is caught in the middle on this issue he's that person. "The State of Idaho wants to see fish health protection like everyone else. If everyone had the same type of policy, of course it would have an impact on us. Anytime you get into an arena where everybody is watching everybody else, there's bound to be improvement for everyone."

Idaho has just released its first draft fish health policy which specifically exempts the private hatcheries from everything except acquiring permits before they release any fish into the state's rivers and streams. Since the food-fish producers rarely return their product to the rivers — it goes to markets as dressed fish instead — the major influence on them, if changes are needed in their operations, will be the Fish Health Protection Committee. ■

Makeshift "incubators" at Dworshak Hatchery test steelhead culling procedure. Eggs from one female fertilized by one or two males are isolated from other eggs. Each incubator has its own water supply line.

The Pacific Northwest Fish Health Protection Committee

> *"Health is the second blessing that we mortals are capable of; a blessing that money can't buy."*
>
> ***– Izaak Walton, The Compleat Angler (1653)***

Sir Izaak Walton, in his much-loved tome on fishing and other sacred pastimes, argued that health should be valued second only to "a clear conscience." If Walton toured the Columbia River Basin today he would find neither blessing in plentiful supply in the fisheries community. Almost no one involved in fish production or fisheries resource management in the Basin claims innocence when it comes to some mishandling of fish and their various and ubiquitous illnesses. That is one reason these same producers and managers have joined forces to tackle the diseases that are often a byproduct of their everyday operations.

The Pacific Northwest Fish Health Protection Committee (PNFHPC) is not the first organization created to develop a systemwide approach to improving fish health in a given watershed; it is simply the biggest and the most comprehensive. Thirteen entities are represented, including the fish agencies from each of the states of Idaho, Montana, Oregon and Washington; two tribal commissions; the federal Fish and Wildlife Service and National Marine Fisheries Service; and private fish producers from each state. Each entity has two representatives on the Committee; one fishery administrator and one pathologist.

"The combination of a pathologist and an administrator is essential," says Jim Warren, executive secretary of the Committee. "Often the pathologists will detect a serious problem, but their message fails to reach or convince administrators who plan fish production and distribution programs. Administrators on the Committee get a crash course in today's fish diseases, and pathologists learn the world of political realities."

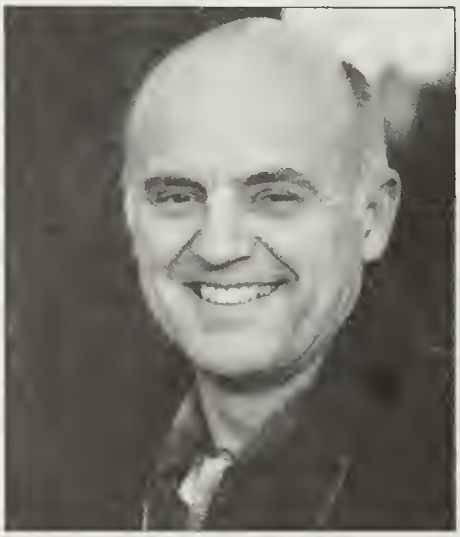
Similar committees have formed in the Great Lakes Basin, in Colorado and on the Eastern seaboard, but seldom have private interests been represented. Dr. Robert A. Busch, the Committee's technical representative from the Idaho Trout Growers Association, feels that the PNFHPC "has the potential for being the most workable and the finest" of the fish health protection committees because of this balance of concerns. "Where the private sector has been left out," he argues, "comprehensive fish health plans have been less successful."

Jim Warren agrees with him. Warren directed the Great Lakes Fish Disease Control Committee in the development of its plan for the basin that encompasses Lakes Erie, Huron, Michigan, Ontario and Superior. The Atlantic states based their plan on the one developed in the Great Lakes. And, when Warren had finished his work in Wisconsin, he was lured to the Northwest to attempt the same coordination here.

Now, Warren is somewhat of a zealot when it comes to pulling people together to work on the issues surrounding fish health. "I tried to get a national fish health plan going with federal legislation back in 1969, but it never made it. So, I decided to regroup and go at it basin-by-basin."

Few basinwide situations he's worked on are more confounding than the fish diseases in the Columbia River. "The problems in the Northwest," he's observed, "are far more complex than those in the Great Lakes. There are more diseases and far more serious diseases." The Northwest Power Planning Council signaled its agreement by urging the Committee to "develop a coordinated, comprehensive fish health protection policy and supporting program" in conjunction with the Columbia River Basin Fish and Wildlife Program.

Jim Warren



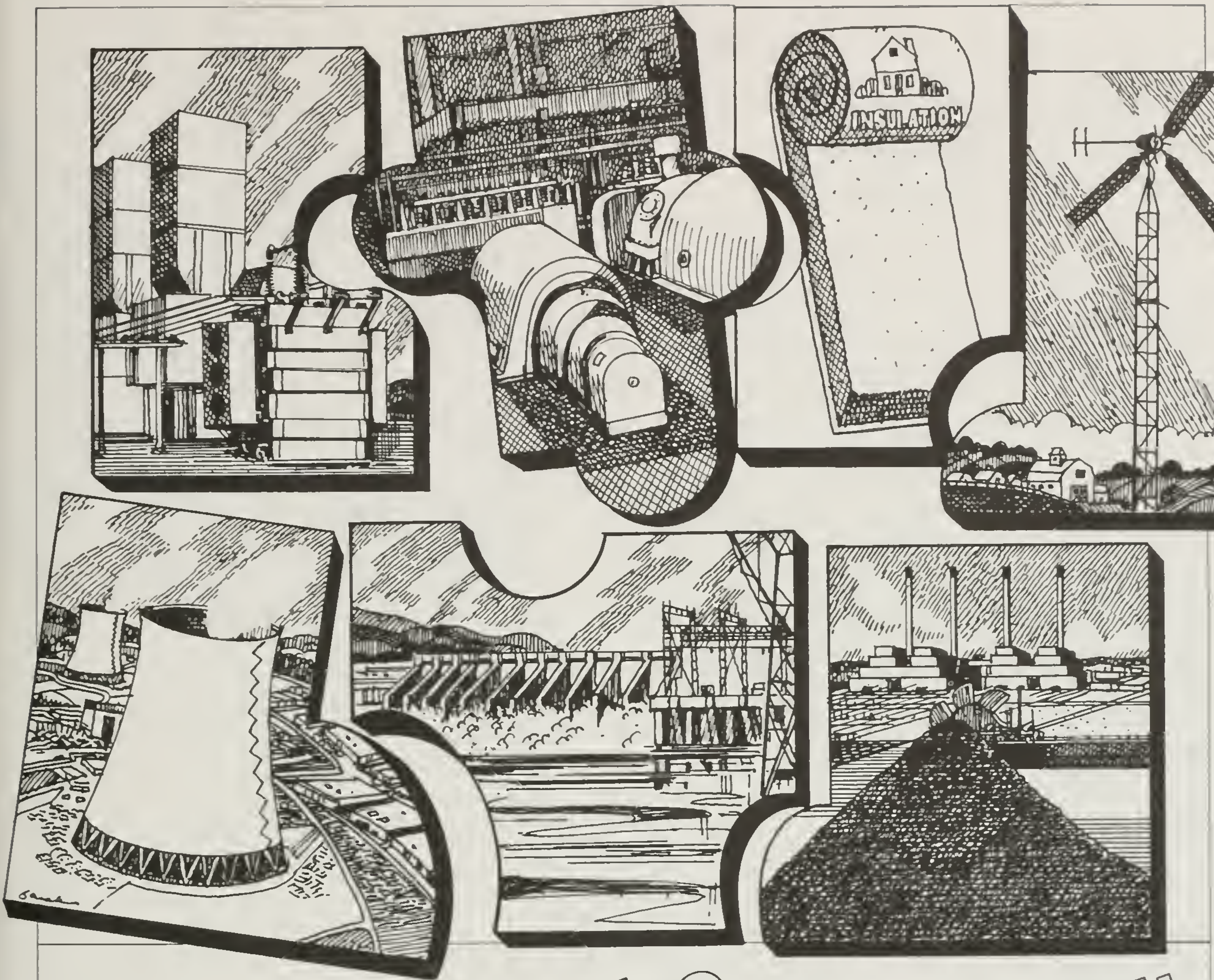
Mark Schneider, fisheries biologist for the Council, was pleased to see the Committee form. "That Committee will provide the major piece of work that was missing from the Basin. Until now we've been trying to put out diseases like brush fires; the Committee will take a much longer and broader view. That's how we *should* approach these disease problems."

"The Committee will help in a lot of ways — we're all in agreement on that one," stressed Busch. "We'll be able to identify stocks and diseases and develop transfer guidelines in response to that. We'll also be prioritizing research needs to develop better methods of treatment and control. Probably most importantly, we'll be communicating."

That communication is what's giving Committee members a shared enthusiasm that their recommendations will effectively limit the spread of fish diseases in the Columbia River watershed.

Doug Dompier, representing the Columbia River Inter-Tribal Fish Commission, gives voice to this optimism when he says: "Everyone is kicking out sick fish, so, it's everyone's problem, and I think we'll lick it. We're all working on it together." ■

by Carlotta Collette



MAKING the PIECES fit

A RESOURCE STRATEGY TO MEET UNCERTAINTY

by Dulcy Mahar

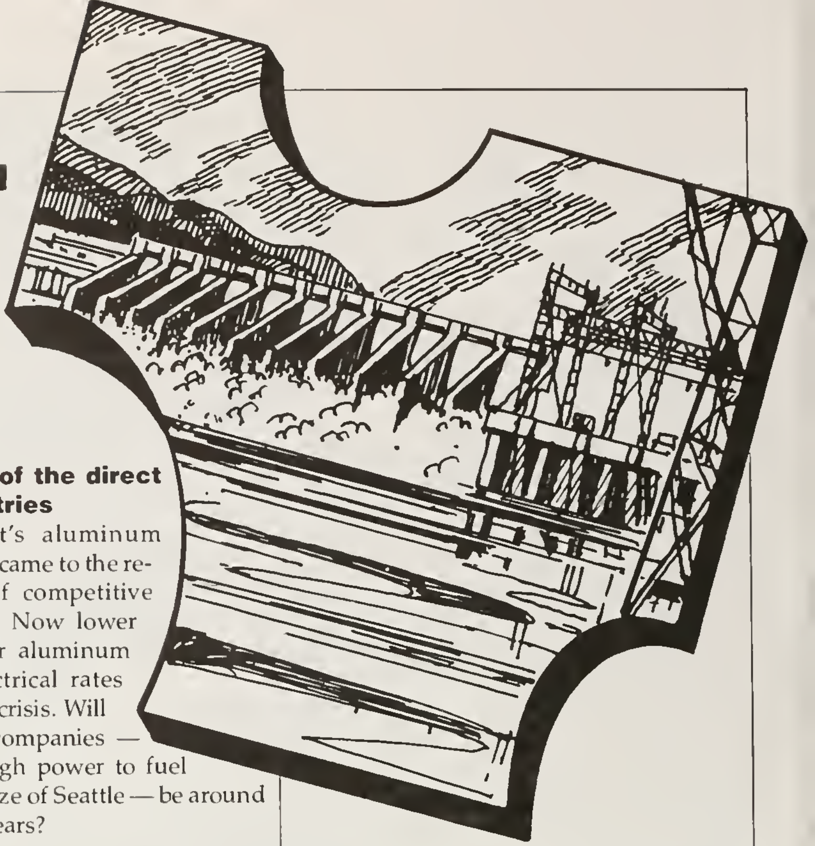
One of the advantages of the single-line energy forecast system is that it's relatively easy to plan resources to meet that anticipated demand. One of the many disadvantages is that ratepayers are out of luck if the planners don't guess exactly right. And in this case, out of luck can mean millions of dollars in unnecessary and expensive resources on one side of the line and a shortfall of resources that could cost the region much needed economic development on the other side of the line.

Preventing those two extremes is the major reason the Northwest Power Planning Council uses a range of electrical demand forecasts from high to low and plans a resource portfolio to meet any eventuality within that range. Currently, the Council is preparing a range of four draft forecasts based on its own analysis and on public comment on the Council's preliminary forecast. The next step is preparing a resource portfolio to meet the projected electrical energy demand indicated by those forecasts. Two critical questions the Council is inviting public comment on are what new resources, if any, are needed and what resources will be most cost effective to the region.

Financial planners use diversity in an investment portfolio to protect the investment from sharp fluctuations in the market. Just so, energy planners diversify their portfolio of available and reliable energy resources to meet fluctuations in electrical power demand. In both cases, the driving force is the same — risk management. The risk is a result of the ubiquitous uncertainty energy planners face. For example, without any other factors chang-

Frank Farah illustration

Two critical questions the Council is inviting public comment on are what new resources are needed and which are most cost effective.



ing, weather can have a profound effect. The difference between average water conditions and critical (historic low) water conditions is more than 3,000 megawatts — the equivalent output of three large power plants. The biggest factor affecting electrical demand is regional economic growth, and that too is uncertain.

In addition to all the uncertainty the Council faced in its first power plan about how much energy would be needed and what resources would be available to meet that need, the Council's power planning staff has identified four new key issues as it develops its 1985 plan. These four include the following:

1. Out-of-region power sales and purchases

The possibility and extent of such sales are major question marks. Is electrical power available from British Columbia or other sources at competitive prices? What is this region's potential to sell its current surplus of electricity to the Southwest?

2. The future of the direct service industries

The Northwest's aluminum plants originally came to the region because of competitive electrical prices. Now lower world prices for aluminum and higher electrical rates have triggered a crisis. Will the aluminum companies — which use enough power to fuel three cities the size of Seattle — be around in the next 20 years?

3. The future of two uncompleted nuclear plants

Washington Public Power Supply System nuclear plants 1 and 3, currently mothballed, represent resources of approximately 1,600 megawatts. Will they be needed and, if so, when? There is also the question of how effectively they can be preserved in a mothballed status.

4. The model conservation standards

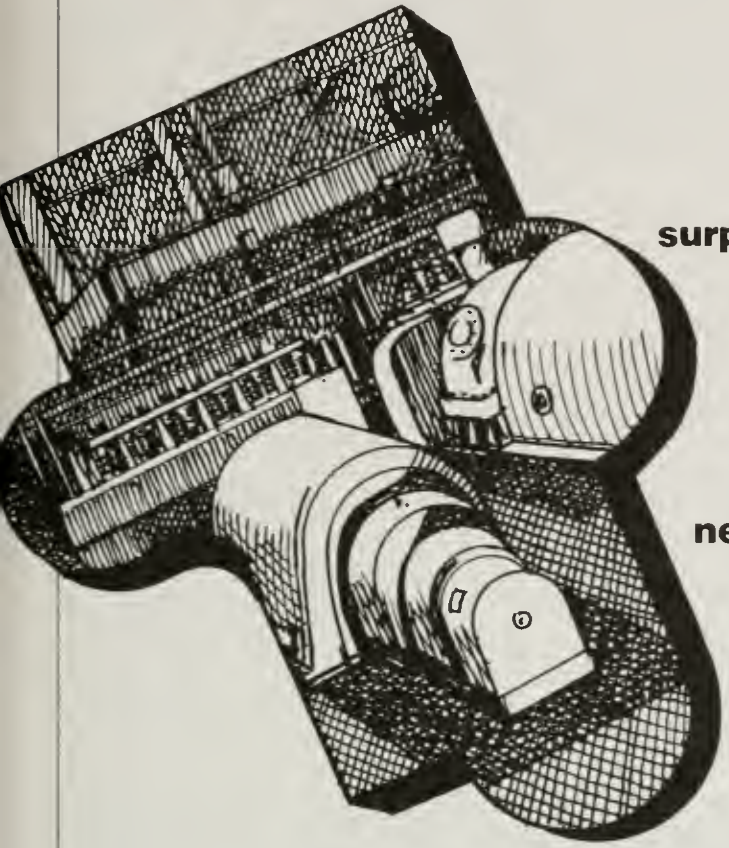
If these standards, designed to produce energy efficient buildings, were to be adopted regionwide, they could significantly reduce the region's reliance on generating resources. In the Council's high forecast, the energy savings from new buildings built to the standards represents approximately 1,500 megawatts. The extent to which building codes or alternatives, such as utility incentive programs, will be implemented is not clear.

Planning resources to meet a range of possibilities requires a key element: flexibility. In its first power plan, the Council introduced flexibility in a variety of ways. For example, it has built its resource portfolio around those smaller resources which have a short lead time. Such resources allow the region to move quickly if the region's electrical demand should suddenly dip or soar.

The Council's 1983 resource portfolio has a specific sequence for adding new, reliable and available resources as needed. In order of the most cost effective first, these resources are conservation, hydropower, cogeneration, combustion turbines and coal plants. In the low forecast, conservation alone may provide all the new energy the region needs. As energy demand increases, however, other resources are introduced in the sequence of their cost effectiveness, so that by the high forecast all the resources may be needed.

Conservation was selected first because, in addition to being the most cost effective, it is also the most flexible resource. It has a relatively short lead time to "construct." Most programs can be put in place within three years. Also, if power demand does not materialize, conservation programs can be stopped with no loss of investment. Another advantage is that the energy savings occur at the same time as the investment. This allows a closer match of resources and needs.

Hydropower is the next most cost-effective resource. Because the hydro system is so variable (depending on the weather), the primary planning issue with this resource is choosing the appropriate water condition against which to plan resources. The region has traditionally used the critical water standard, but this too will be reviewed and subject to public comment in the new power plan. Other renewable resources were considered either too expensive or unreliable at the time the 1983 plan was drafted. However, the Council did include research and monitoring of renewable technologies in its first plan.



Today, with a temporary surplus of power, flexibility is equally important to prevent overbuilding of expensive new resources.

Eventually, the region will run out of its potential for conservation and low cost renewable resources. Cogeneration is the recovery of "waste" energy created by industrial or commercial processes or the simultaneous production of electricity from another fuel source. It has the advantage that cogenerators can be shut down or started as demand dictates.

Combustion turbines, scheduled to come on line in the medium high and high forecast ranges of the Council's original power plan, are another example of flexibility. They have a relatively low cost to build, but a high cost to operate. That means they can be built for use only if power is needed, but left idle when it is not needed. This low capital versus high operating cost characteristic was a major reason the Council included combustion turbines in its resource sequence.

It was the relatively short lead time of coal plants compared to nuclear plants that led the Council to choose coal as the preferred thermal resource in the 1983 plan.

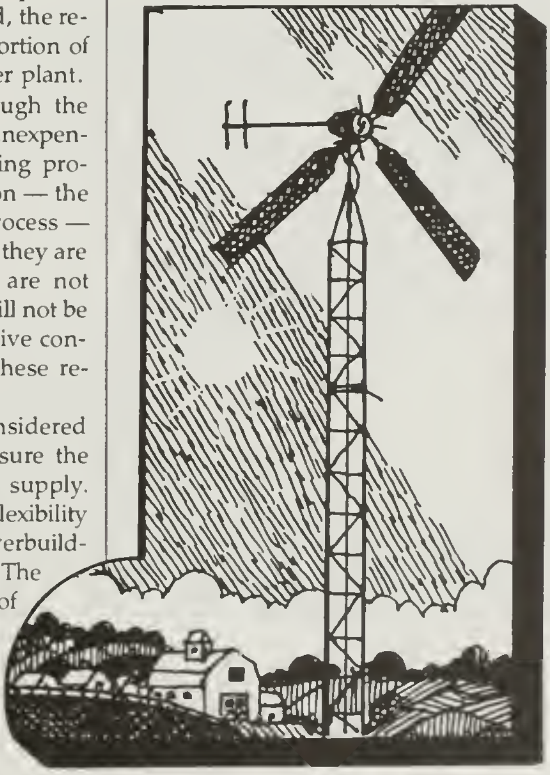
The Council also introduced the options concept in its original plan as another way of ensuring flexibility in planning. Resource options are similar to options on a piece of land where money is put down now for the right to develop the land sometime in the future. If it turns out the region doesn't need the power the potential resource would have supplied, the region has only paid for a small portion of the cost — not for a whole power plant.

Options take a resource through the time consuming, but relatively inexpensive planning, siting and licensing processes. Then, prior to construction — the more expensive portion of the process — they may be held in reserve until they are needed, or terminated if they are not needed at all. Thus, ratepayers will not be stuck for the vastly more expensive construction phase if it turns out these resources are unnecessary.

Originally, flexibility was considered important to planners to make sure the region had an adequate energy supply. Today, with a surplus of power, flexibility is equally important to prevent overbuilding of expensive new resources. The Council is working with the rest of the region to deal with the surplus by investigating selling more power — both inside and outside the region — on an interruptible basis. For example, earlier this year the Council forwarded the idea of making a larger portion of the power Bonneville sells to direct service industries (such as aluminum plants) interruptible in return for lower rates. Not only would these industries receive a rate break, but the region could avoid building expensive new resources to serve a firm load.

The sale of power outside the region offers a great potential for the Northwest — and also potential danger. While few disagree that power should be sold, there is much controversy over how it should be sold and for how long. The danger lies in committing resources long term outside the region so that they cannot be called back if the region needs them. In that event, the region could be faced with developing resources for its own use which cost more than resources being sold outside the region.

All of these resources and options are being scrutinized closely as the Council prepares its new 20-year power plan for the four Northwest states. A draft of the plan will be released in July, and the final plan adopted in December. In the meantime, the Council is actively soliciting public comment on resource development as well as other major issues. For more information about participating in this planning process, call or write to the Council's Public Involvement Division (see address and toll free phone numbers on the inside front cover.) ■



THE

LEARNING CURVE

BUILDERS REPORT ON REGIONWIDE TRAINING PROGRAM

How are walls built so they can hold more insulation than some old attics? How can attics be constructed so ten or 15 inches of insulation can fit in them? How can air leaks be reduced to a minimum? What are the least expensive ways to do all this?

These are a few of the questions a regionwide Residential Standards Demonstration Program (RSDP) sponsored by the Bonneville Power Administration was designed to answer. The training program was set up to give homebuilders in the Northwest an opportunity to learn advanced building techniques for constructing homes that meet the Northwest Power Planning Council's model conservation standards for new electrically heated homes.

Builders in the program had the opportunity to build very energy efficient homes with training, marketing assistance, cash incentives and ongoing energy use monitoring to back them up. The program gave participating builders a distinct advantage over nonparticipants. Most of them found that after their first house was completed the second and subsequent houses were not only easier to build, but they tended to cost less than the first house. Below are some comments from builders in each of the four states. –CC

IDAHO

Dave Ross

There may be controversy surrounding the model conservation standards developed by the Northwest Power Planning Council, but it's largely bypassed Mountain Home, Idaho, where homebuilder Dave Ross is blazing new trails in energy efficient construction. The owner of T-D Construction, Inc., Ross has built the most homes — 11 single family — under the Residential Standards Demonstration Program (RSDP), administered in Idaho by the Department of Water Resources.

To him, that's no great feat; it's simply good business. Ross says he chose to participate in the program because his experience with Mountain Home consumers is that they're becoming more energy conscious. He's found that if the energy costs of a home are lower, homebuyers realize they can afford a more expensive home with the features they desire.

He also joined the program because he wanted to gain additional experience in energy efficient construction to keep a step ahead of his competitors.

Though Ross says his experience with

by Susan Skog

the program has been positive, he did encounter a few snags with reliance on some energy efficient features, such as the air-to-air heat exchanger used to provide proper ventilation in an efficient home.

In his experience, the heat exchanger was too expensive and too inefficient. So, to meet the model standards, which allow alternate paths, and avoid using the heat exchanger, Ross experimented with a small ventilating fan that also achieves the proper ventilation required by the standards.

By working closely with his architect, Ross found his company quickly learned the special techniques for building energy efficient homes. The first several homes required additional planning and attention to details, but the cost of building to the standards "dropped considerably with subsequent homes because most of the learning was over.

"We are now achieving the standard without a great extra cost," he reports. In fact, his company is now able to build a home to the model standards for only about $1,000 more than conventional construction costs.

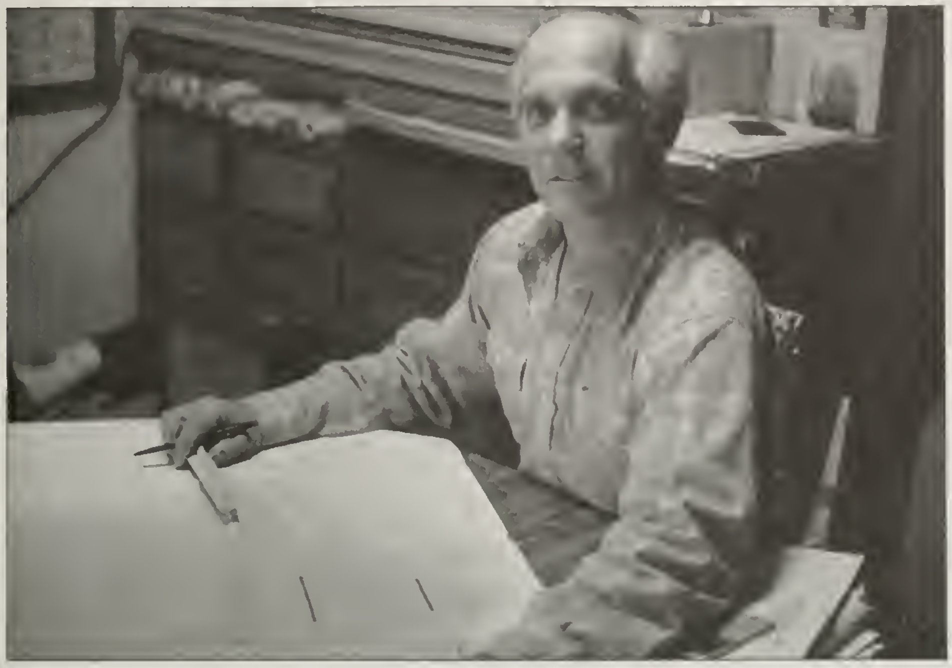
The response from consumers has been "quite good," he adds. Most of his homes were pre-sold before construction was started, partly because Ross added another sweetener which attracted buyers. He's persuaded a Mountain Home lending institution to relax its qualification guidelines by adjusting the debt-to-income ratio for loan applicants, based on the lower energy costs found in more efficient homes.

Overall, T-D Construction has found that building homes to the model standards has given the company "a keen edge over our competition," Ross says. "We've sold homes to people who otherwise may not have bought a house in this area."

Other builders have tried to capture the market on energy efficient construction in his area, he says. "But no one has yet been able to back up their energy efficiency with facts and figures courtesy of the Water Resources Department and the Power Council . . . People seem to pay more attention when there's some credibility." ■

MONTANA

by Terri Wilner


Glenn Voelkel

Terri Wilner photo

Glenn Voelkel has built several hundred houses in his construction career. When he first began building in 1956, the state-of-the-art in insulation was balsam wool, a tar-paper material coated with $1\frac{1}{2}$ inches of finely shredded cellulose and glue. One layer of balsam wool would be stapled to the two-by-four wall studs, and a double layer would go into the ceiling.

"I would hate to guess what the R-value of balsam wool was," Voelkel said. "We really didn't even know what R-values were back then. What we found out was that mice loved balsam wool, and it didn't take long for them to reduce it to nesting material."

Over the years, "common sense" has led Voelkel to try a number of ways to "help offset the cost of heating in Montana." By the mid-1970s, his construction firm was regularly using two-by-six walls and trusses that accommodate added insulation. He began to offer a variety of energy options to his customers, using a typical HUD house as a standard for comparison. Voelkel found that, after discussing the various options with prospective homebuyers, they almost always asked him to incorporate energy conserving features in their homes and were willing to pay the extra costs.

"I stress resale heavily when discussing energy efficient building," Voelkel says. "That two-by-four house with leaky windows and doors — even if it's in a good neighborhood and looks nice — what's it going to be worth in four or five years? This is a major fear in owning a house that's poorly built."

Voelkel said the program was "worth its weight in gold. It forced us to do things we kind of knew about, but weren't sure if it was worth the risk to try," he said. Although many of his subcontractors were not able to attend the training, they all have a very positive attitude, according to Voelkel. They feel that, "If we get a jump on this, at least we'll be able to hold our own and stay in this very competitive business."

Glenn Voelkel constructed three homes under the program and is continuing to incorporate what he learned into the 30 to 50 houses he builds annually. ■

WASHINGTON

by Mickey Riley

"Unless somebody absolutely insists they don't want it," Dave Cathey says, "we'll continue to build houses to this level — even without the program." Cathey, a general contractor for South Whidbey Island, Washington, is building two homes for the Thermabilt program, Washington's Residential Standards Demonstration Program.

"What we've been doing when people come to us for custom jobs is explaining the benefits of building to these levels. We tell them that if they don't want it, it's their money, but I think they're damn fools — in so many words." Cathey's directness hasn't cost him customers. "We have five homes we have bids on, one of them we're starting right now, and all of them are direct spin-offs from Thermabilt program information."

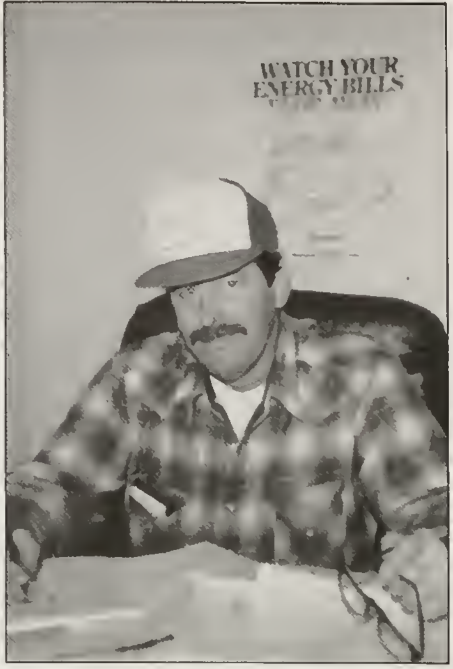
On his second Thermabilt home, Cathey says, he's cut some time and materials costs in half. "On the vapor barrier, we've gone from eight days to four days. That includes all the caulking around the boxes. We used half as much caulking material in the second home and that's a savings of $100 right there."

Cathey's subcontractors "had a little trouble at first, just like we did," learning how to do the work. "But so far as their mental attitude goes, it's extremely good. All of my people are behind it and think it's what we should be doing. They're trying to find better, more innovative ways to do it, at less cost."

Does he think that building it right the first time is a good way to achieve energy savings?

"You can't accomplish these things in an existing house," he says. "And it depends on energy costs. The higher the energy costs go, the better it's going to look. Ten years ago it wouldn't have been as good a deal. Right now, it's perfect!" ■

Dave Cathey



OREGON

by Judi Hertz

Paul Wulf

Judi Hertz photo

Paul Wulf has been building homes in the Salem, Oregon area for eight years. When he first heard about the Oregon Home program, Oregon's version of the Residential Standards Demonstration Program, he wanted to be a part of it. "I wanted first-hand experience to find out how much it would cost to build homes to the new specifications and how difficult it would be to do that," he said. "I have an identical house heated with gas on the same street as my two Oregon Homes. I'm curious to see how it compares in heating costs to the Oregon Homes. The gas-heated house is built to current Oregon standards."

Wulf said there were no surprises when he got to the actual construction of his Oregon Homes because of the complete instructions covered in the Oregon Department of Energy builders training seminars. He feels the most positive experience he gained from participating in the program is the knowledge about the components of building such energy efficient homes. "If somebody wants to talk to me about — 'say, I'd like to build a house but I'm really concerned about energy. What alternatives do I have and what do you think would have the fastest and most rapid payback?' I feel I've got a better handle on what is going on."

His most negative experience is "not being able to sell the house, yet." Wulf has sold one of his two Oregon Homes and the second is on the market.

Wulf feels the model conservation standards should make it easier to finance homes because the utility bills of an electrically heated home built to the standards would be so much less than one which is not. "But lenders in our market area don't take those things into consideration when they are trying to figure out qualifications for a buyer."

He feels it is important to bring lenders up to speed on the advantages of granting mortgages on energy efficient homes, even if the homes cost a bit more. But, he said it might be difficult. "Lenders work like giant dinosaurs. They are real slow to change."

Wulf said the most attractive energy conservation features of the Oregon Home are thermal pane windows with a thermal break, foam in the openings around windows, beefed up insulation and the metal front doors. Lower heating costs and comfort inside the house are the most attractive selling features.

He added that where there is a problem in building an Oregon Home, it is because the subcontractors are being asked to do something different from their usual methods. One of these problem areas is the continuous air-tight wrap on an Oregon Home. "I don't like to be the first person doing something like that. There aren't many subcontractors here in town familiar with that procedure. When I made my choice, it was not to go with the continuous wrap because of my concerns about the air quality."

All in all, Wulf's experience with the Oregon Home was a positive one — if he could only sell the house he has for sale, he would feel even better! ■

Interview:

Bill Wilkerson

by Carlotta Collette

When the Northwest Power Bill was delayed by the House Commerce Committee because Michigan's Congressman John Dingell wanted to see fish and wildlife protection in the legislation, the Public Power Council hired Washington state attorney William R. Wilkerson to help hammer out terms that would rescue the bill. Once the bill became law, Wilkerson, then deputy director of the Washington Department of Fisheries, worked closely with fish and wildlife agencies and four of the Indian tribes in the Basin to come up with recommendations for the Columbia River Basin Fish and Wildlife Program.

In April of 1983, Wilkerson was appointed director of the department he had seconded, and his participation in major fisheries issues in the Northwest expanded. Timothy Wapato, director of the Columbia River Basin Inter-Tribal Fish Commission, notes, "Bill has always been extremely helpful in getting people to achieve consensus, particularly in the area of fisheries protection."

Participants in the United States/Canada Treaty negotiations also found that Wilkerson's role in their discussions was critical. With that treaty's recent ratification (see news story on page 5), Bill Wilkerson is ready to get back to strategies for saving the salmon along the North coast, in Puget Sound and, most especially, in the Columbia River Basin.

Carlotta Collette photos

Interview: Bill Wilkerson

What first drew you to fisheries' issues; were you a fisherman?

I did fish commercially for about three years, but I'm a lawyer. I'm from the Northwest and I specialized in environmental law in law school. I think this whole emphasis on fisheries and public policy found me, more than me finding it. It's an extremely complicated field. Once you get in and begin to understand it, it's pretty hard to leave.

I think the fish are a barometer of the health of a region; if fish can't survive here, people ought to be very concerned about their own survival. The fish are also a part of our heritage in the Northwest. They provide a psychological benefit. And, of course, to the treaty tribes the salmon are a ceremonial resource. The dollar and cents arguments don't begin to weigh their real value.

"The fish are a barometer of the region; if fish can't survive here, people ought to be very concerned about their own survival."

How did you end up as the lawyer for the power interests in the Power Act negotiations?

I didn't really care who paid me in that situation, because my primary role was as a mediator. I had an interest in the fish. I'd been involved with fisheries problems for years. Both sides knew I was not just a power advocate.

They hired me as a mediator for two reasons: they knew Congressman Dingell wanted fish and wildlife protection in the legislation, and they lacked background in all the complex details of fish management and fisheries negotiation. They couldn't talk knowledgeably to the fisheries people themselves, and I could.

What was your goal in those talks? What did you want out of the Northwest Power Act?

My goal as a lawyer was to bring fisheries up to equal partnership with power interests in the Region. The Columbia River salmon losses were enormous. The fish and wildlife interests were in desperate need of authority to protect the resource. It was important to give the Power Planning Council that authority.

Was the Power Act any different than any of the other laws and programs designed to save the fish?

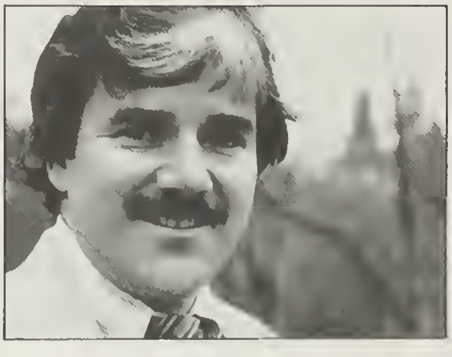
The Power Act was a clear statement from Congress that "enough is enough." The Columbia River runs had been largely ignored for years. The Power Act broadened the responsibility of the power interests, of the Bonneville Power Administration, the Army Corps of Engineers, the Bureau of Reclamation and others to consider the Basin's fish and wildlife when they make their decisions. The Act strengthened the fisheries. The Act is the strongest law that exists regarding the Columbia River fisheries.

With all that riding on the Council, how effective do you think it's been? Are you content or critical about the past four years?

The Council was most effective when it pushed us all into cooperation. The fish and wildlife agencies and the tribes reached a consensus on more than 95 percent of the recommendations that were incorporated into the Fish and Wildlife Program, thanks to the Power Planning Council. The Council cajoled fish and power interests into reaching agreement. It helped us organize and design a program.

I think the Council remains effective, but would be more so if it assumed the role it had then of bringing people to the table and "beating their heads" until agreement was reached. Who better is there to facilitate this than the representatives of the four states? The law gives them plenty of authority, but they haven't been as aggressive since the program was finished.

The only real negative I'd articulate is that implementation is a bit slower than many of us had hoped it would be. That's not entirely the Council's fault. Getting people to see that the laws have changed, that they can't keep doing things the way they always did, is hard work. There is so much contention among the various interests. Everything is still a debate. No one seems to be giving an inch. If there are going to be fish for anyone — the fisheries, the power people, or anyone else — there will have to be cooperation on *everyone's* part.



I'm concerned about apparent power struggles in the region. Congress required us to work these things out. We need everyone's commitment to make this work. We need the Corps and Bonneville, too. We've proven we're stronger if we pull together.

Can you talk about how you see the region doing that — pulling together?

I think the new role of the tribes is a good example. The Act and federal court decisions say the tribes are fisheries managers. We have been slow to recognize this. Being in the same room together, talking things out, we're doing better than if we were in separate rooms litigating.

The U.S./Canada Treaty is another example. We all grimaced when we had to make decisions jointly; but all sides suffered about equally, and the treaty was drawn. It took a recognition that Alaska, Canada, the tribes and the southern states had to go home with something. We all have to survive. Yet, because the resource is limited, each of us had to give up some of our hopes and positions.

As we turn to implementing the Fish and Wildlife Program we will once again need the Council to get us together to accomplish our goals. The Council has very effectively used the consultation process in the past. I would hope that all parties could present implementation strategies in the same sort of forum. We need to see the strategies we are developing with Oregon, Idaho, Montana and the tribes fit into the Program.

We also need to meld our production plans with our harvest plans. We all have basic allocation and fisheries requirements. We aren't in the business of producing more fish just so people can go out to the dams and watch them pass by the windows. We have to produce fish for the marketplace, or for people's recreation. Every fishery has certain needs. Our plans should be shaped to meet those needs.

In Washington we harvest about seven or eight million fish each year. That's millions of dollars in the economy. There are processors, there's enormous recreation value, there are Indian and non-Indian harvests, etc. The money we spend is far less than what we recover.

Our approach to improving fisheries is a joint process. All of the so-called user groups are involved. The tribes, the federal government, each of the states. We're working on a watershed-by-watershed basis. We've had some very productive negotiations. We're developing cooperative management plans considering each other's needs. There's much more chance of success now than ever before.

"The Power Act was a clear statement from Congress that 'enough is enough'."

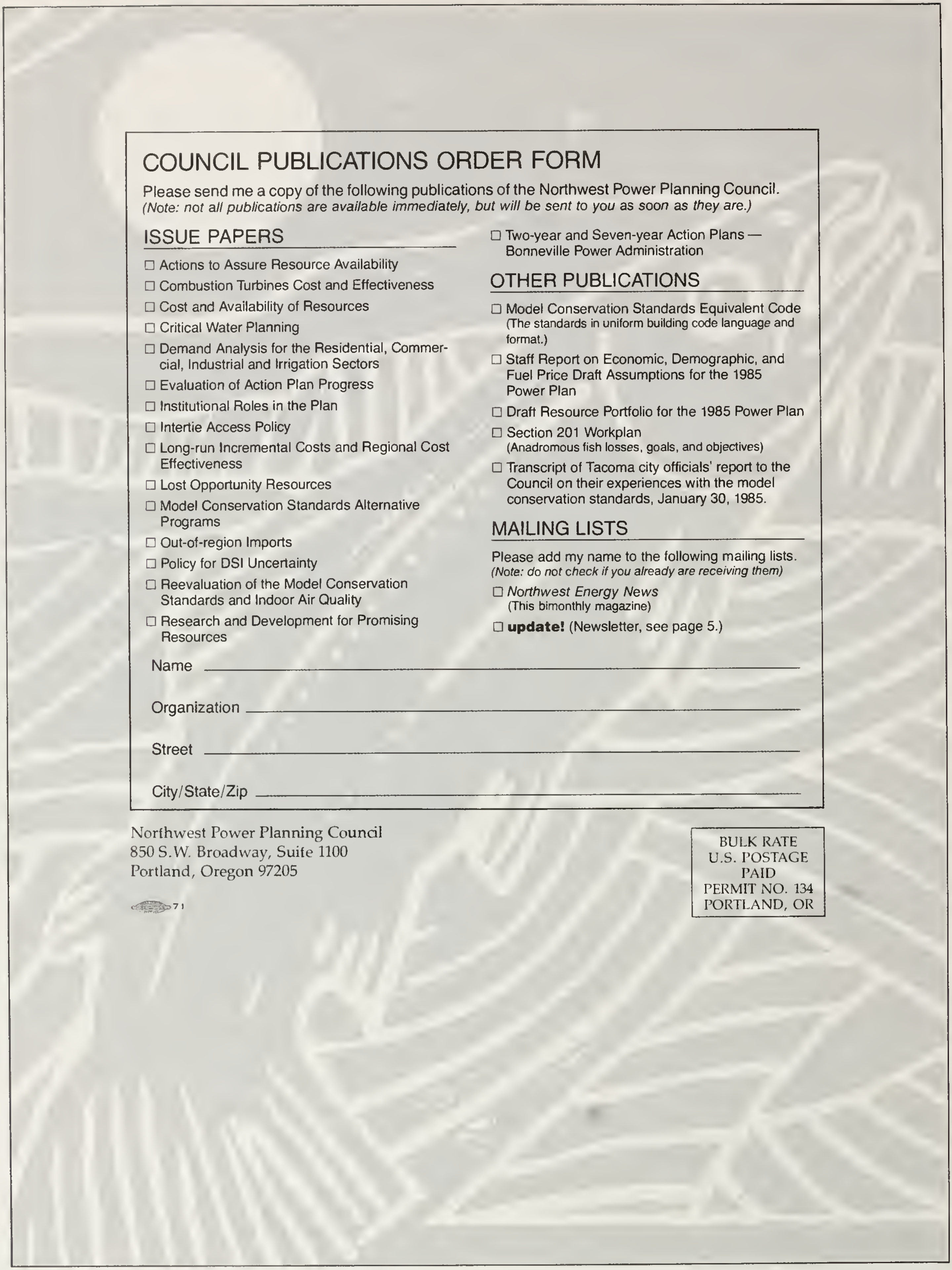
You mentioned the U.S./Canada Treaty. How will that fit into this whole picture?

One of the main problems for us was that Columbia River stocks were being harvested more in Alaska and Canada than in the Columbia Basin. This was a particular concern for the upriver treaty tribes who were getting fewer and fewer fish. With the treaty we will get more fish in Oregon and Washington. More fish will be available in general. The whole southern fishery will be improved because we'll be getting fish back from Canada and Alaska. I think the U.S./Canada Treaty is the single most important piece in the overall Program.

We'd have liked to get more chinook back from the North. Some would argue we had to give up some of the Fraser River [in Canada] fish that our fishermen have shared in for many years. We'll get more than enough fish throughout the states to make up for any losses on the Fraser, however. Because of the investments we're making to enhance the fishery in response to the Fish and Wildlife Program, we needed this assurance that we'd be getting fish back.

Do you think the Program is as important to other people in the region as it appears to be to you?

The Program has its fits and starts. This is still the start-up period. Maybe it could go faster or slower, but it's coming along. As we see more involvement in things like the water budget and the enhancement projects, it will become more real to other participants. As more people in the region begin to feel a part of it, the Program will gain credibility. It will become theirs because they'll be the ones making it happen. ■



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- ☐ Reevaluation of the Model Conservation Standards and Indoor Air Quality
- ☐ Research and Development for Promising Resources
- ☐ Two-year and Seven-year Action Plans — Bonneville Power Administration

OTHER PUBLICATIONS

- ☐ Model Conservation Standards Equivalent Code (The standards in uniform building code language and format.)
- ☐ Staff Report on Economic, Demographic, and Fuel Price Draft Assumptions for the 1985 Power Plan
- ☐ Draft Resource Portfolio for the 1985 Power Plan
- ☐ Section 201 Workplan (Anadromous fish losses, goals, and objectives)
- ☐ Transcript of Tacoma city officials' report to the Council on their experiences with the model conservation standards, January 30, 1985.

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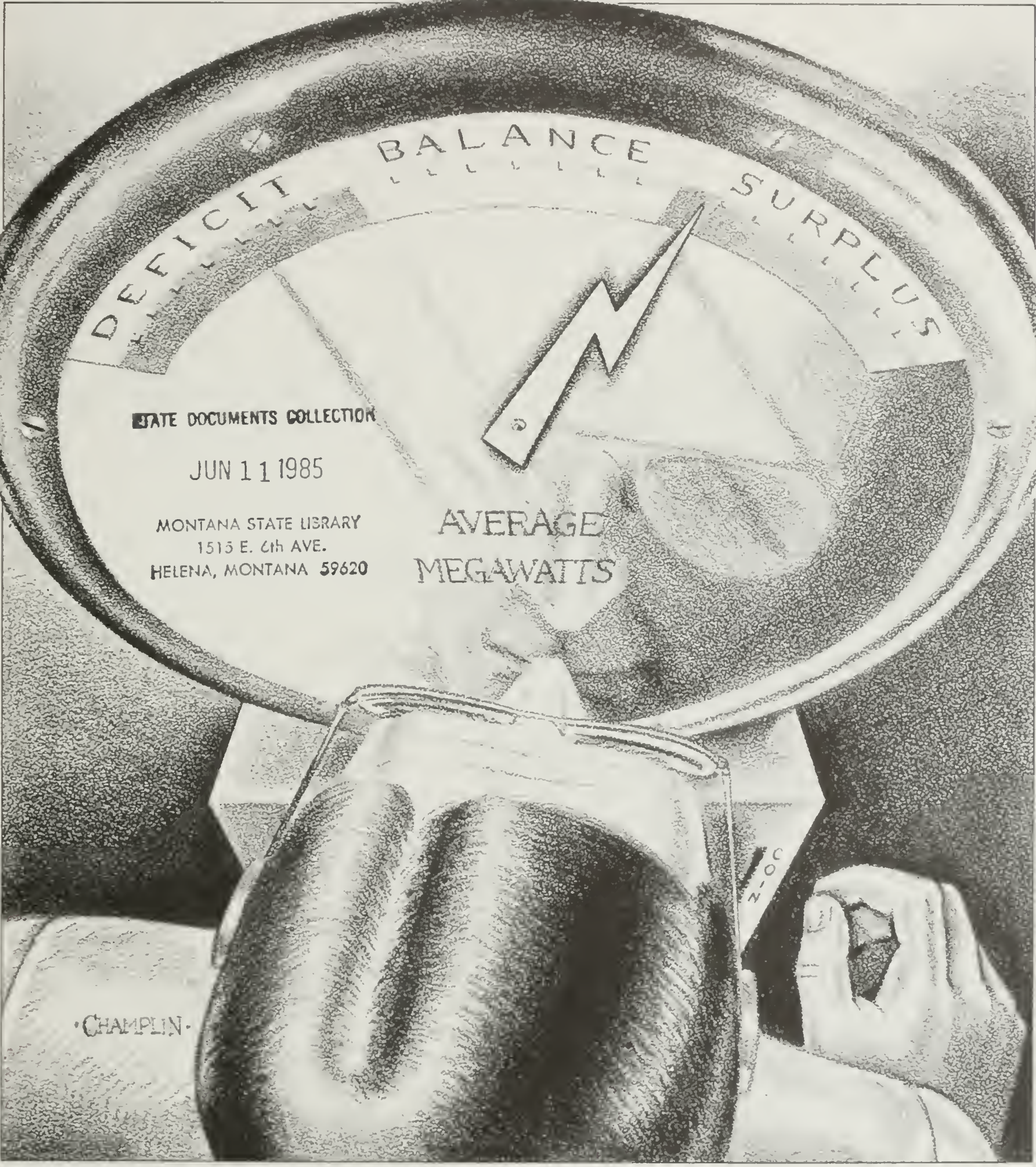
Volume 4, No. 3 Northwest Power Planning Council May/June 1985



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Idaho

Northwest Power Planning Council
Statehouse Mail
Towers Building
450 West State
Boise, Idaho 83720

Telephone: 208-334-2956

Council Members:
W. Larry Mills
Robert Saxvik, vice chairman

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620

Telephone: 406-444-3952

Council Members:
Morris Brusett
Gerald Mueller

Oregon

Northwest Power Planning Council
505C State Office Building
1400 S.W. Fifth Avenue
Portland, Oregon 97201

Telephone: 503-229-5171

Council Members:
Donald Godard
Roy Hemmingway

Washington

Northwest Power Planning Council
Olympic Tower Bldg., Suite 700
217 Pine Street
Seattle, Washington 98101

Telephone: 206-464-6519

Council Members:
Charles Collins, chairman
Kai Lee

Central

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, Oregon 97205

Telephone: 503-222-5161
Toll Free: 1-800-222-3355
(1-800-452-2324 in Oregon)

Executive Director: Edward Sheets

NORTHWEST
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The Northwest Power Planning Council is required to develop a program to restore the Columbia fisheries and a regional electric energy plan, to be carried out by the Bonneville Power Administration, emphasizing cost-effective conservation and renewable resources.

Executive Editor: Dulcy Mahar
Graphic Design: Linda Sawaya
News Editor: Steve Engel
Features Editor: Carlotta Collette
Special Departments Editor: Ruth Curtis

EDITOR'S NOTES

This issue, like previous ones this year, features issues the Northwest Power Planning Council is dealing with as it develops its 1985 power plan. The next issue will include highlights and a synopsis of the entire draft plan, along with instructions for comment.

Because it cannot be completed until the draft is adopted this summer, the next issue will be late. We will publish as close to completion of the draft as is technically possible. *–DM*

Cover illustration by Dale Champlin

CALENDAR

June 3-4 — Workshop for building department personnel on techniques for evaluating energy efficient construction. At the Seattle Center, Seattle, Washington. For information: Bonnie Scott, Washington State Energy Office, (206) 754-0724.

June 3-6 — "Renewable Energy Technologies Symposium and International Exposition." Anaheim Convention Center and Marriott Hotel, Anaheim, California. For information: Linda Ladas, TMAS, 680 Beach St., Suite 428, San Francisco, California 94109. (415) 474-3000.

June 5-6 — Northwest Power Planning Council meeting in Portland, Oregon.

June 6-7 — Workshop for building department personnel on techniques for evaluating energy efficient construction. At the University of Puget Sound, Tacoma, Washington. For information: Bonnie Scott, Washington State Energy Office, (206) 754-0724.

June 18-20 — "Northwest Energy Expo '85" at the Sea Tac Red Lion in Seattle, Washington. For information: Tressel-Lewis & Associates, 10636 Main Street, Suite 443, Bellevue, Washington 98005. (206) 455-9917.

June 22-23 — 1985 short course on the Columbia, "The Columbia Gorge: A Unique American Treasure." Sponsored by the Washington State and Oregon State University Cooperative Extension and Sea Grant Programs. For information: Short Course on the Columbia, 1919 NE 78th St., Vancouver, Washington 98665. (206) 696-6018.

June 26-27 — Northwest Power Planning Council meeting in Seattle, Washington.

July 10-11* — Northwest Power Planning Council meeting in Missoula, Montana.

July 14-19 — 1985 Joint Conference of Western Association of Fish & Wildlife Agencies and Western Division of the American Fisheries Society in Snowmass, Colorado. For information: Colorado Division of Wildlife, 6060 Broadway, Denver, Colorado 80216.

July 17-18* — Northwest Power Planning Council meeting in Portland, Oregon.

July 29-August 1 — International Small Hydro Exposition and Symposium in Portland, Oregon. For information: Northwest Small Hydroelectric Association, (503) 388-2080.

August 7-8 — Northwest Power Planning Council meeting in Portland, Oregon.

August 19-21 — "Energy Conservation Program Evaluation: Practical Methods, Useful Results," conference sponsored by Argonne National Laboratory, Bonneville Power Administration, Illinois Department of Energy and Natural Resources, U.S. Department of Energy in Chicago, Illinois. For information: Gail Ettinger, Evaluation Conference Coordinator, Argonne National Laboratory, Building 362, 9700 South Cass Avenue, Argonne, Illinois 60439.

August 28-29 — Northwest Power Planning Council meeting. Call central office for location.

September 7-12 — American Fisheries Society and International Association of Fish and Wildlife Agencies Conference in Sun Valley, Idaho. For information: Steve Barton, Idaho Department of Fish and Game, P.O. Box 25, Boise, Idaho 83707.

September 25-27 — "Waterpower/'85; An International Conference on Hydropower" in Las Vegas, Nevada. Sponsored by the U.S. Bureau of Reclamation. For information: American Society of Civil Engineers, 345 E. 47th St., New York, New York 10017.

*Tentative

Compiled by Ruth Curtis

IN THE NEWS

Dave Frohnmayer

Oregon attorney general backs constitutionality

Oregon's attorney general Dave Frohnmayer strongly defended the constitutionality of the Northwest Power Planning Council during argument in Seattle May 9 before the 9th Circuit Court of Appeals.

Frohnmayer represented the four Northwest states and the National Governors' Association in opposing a suit brought against the Council by the Seattle Master Builders Association. The suit disputes both the validity of the Council's model conservation standards and the Council's legal authority to impose them.

Frohnmayer urged the three judges to find that the Council was legitimately formed within the scope of the Compacts Clause of the U.S. Constitution and that the Appointments Clause of the Constitution does not apply to the Council.

The Master Builders have argued that the Executive Branch of the federal government must appoint Council members, because they exercise significant authority over a federal agency, the Bonneville Power Administration. Frohnmayer told the Court that the Master Builders are misreading the Constitution and case law on this point.

Council members are not federal officers, to whom the Master Builders argument would apply, but are officials of an interstate compact agency, he said. They derive their authority legitimately from their respective states. Congress frequently delegates powers to states in this manner, Frohnmayer added.

He also warned that to find otherwise would threaten the accomplishments and existence of interstate compacts around the country, and could "have profound impacts" because almost every federal program is administered by state agencies. He said the effects of the petitioners' argument "would be monstrous."

Interstate compacts predate the constitution, Frohnmayer said, and the U.S. Constitution protects those forms of consent.

Frohnmayer argued that virtually all federal programs for child support, highways, education and the employment division are administered by the states, but that the various governors, attorney generals and other state officials are in no way subject to appointment by the President or the heads of federal departments.

A decision in the case may take as long as two years, according to Frank Ostrander, the Council's general counsel.
–SE

Council members call for restoring funds in Bonneville budget

Urging restoration of $72 million cut by the Administration from conservation borrowing authority of the Bonneville Power Administration, Northwest Power Planning Council Chairman Chuck Collins and Oregon Council member Roy Hemmingway told Congress, "The budget as proposed is not consistent with the Council's 1983 Power Plan."

Collins and Hemmingway addressed the Subcommittee on Energy and Water Development in Washington, D.C., in April. Collins pointed out that "the cheapest resource available to meet future needs [in the Northwest] is conservation—the resource on which Congress placed the highest priority in the Northwest Power Act."

He emphasized that, because "the region is currently surplus, the Council is not advocating that BPA acquire conservation megawatts—except in areas where conservation opportunities would otherwise be lost."

Collins said, "The Council is concerned that the FY86 Administration budget as proposed would . . . distort conservation spending priorities by virtually ending conservation capability building in the commercial, industrial, agricultural, and governmental sections."

Collins argued that "a classic example of . . . a lost opportunity resource is the construction of new residences in the region."*—SE*

Northwest Council members toured Boeing's giant facilities in Washington state as part of their research on major industrial electricity users (see story page 24). The building they are in is 6.1 million square feet—or the equivalent of 104 football fields. From left are Roy Maus, Boeing; Roy Hemmingway, Don Godard, and Gerald Mueller, the Council; Ken Canon, Industrial Customers of Northwest Utilities. That's a 747 in the background.

New powerhouse plan will save more fish

New operating procedures at Bonneville Dam's second powerhouse should save the lives of millions of young salmon and steelhead trout trying to get to the ocean this spring.

Northwest Power Planning Council Chairman Chuck Collins has commended the Army Corps of Engineers on its timely plan to meet the Council's requirements for an 85 percent fish passage efficiency (the percentage of fish that are diverted away from the turbines).

In 1982, a $23 million, state-of-the-art juvenile fish bypass system was completed at the second powerhouse to divert the young fish from the turbines. However, when operation of the facility was measured in 1983, it showed unusually low fish passage efficiencies.

Consequently, the Council called on the Corps to solve the problems at the powerhouse and, in the interim, to develop a plan that would include sufficient spill levels to prevent fish passage through the turbines, or shut the powerhouse down during the spring migration.

The Corps plan calls for operation of the dam's first powerhouse as much as possible, with complete shutdown of all turbines at the second powerhouse from 8 p.m. to 7 a.m., when the majority of the fish will be passing.

During daylight hours, the units at the second powerhouse will be operated only when necessary to reduce the spill over the dam that could pull upstream migrating adult salmon from the top of their fish ladder back down through the spillgates.

The Corps is continuing its work to come up with long-term solutions. *–CC*

DSI Options Study issued by Bonneville

No recommendations were included in a draft report on the Bonneville Power Administration study of direct service industry (DSI) options, issued in April. Bonneville will produce its conclusions in June, following a public comment period that ended May 10, said Terry Esvelt, DSI options project manager.

Published results of the studies, however, show that "increased interruptibility looks the best at this point," according to Wally Gibson, manager of system analysis and rates for the Northwest Power Planning Council. "But there's more work being done," he added.

Rates for direct service industries—mostly aluminum smelters—have increased dramatically over the last six years, from .3 cents per kilowatt hour in 1979 to 2.7 cents in 1984, before dropping toward 2 cents in a series of emergency reductions. World aluminum prices in recent years have plummeted, leaving some DSIs on the verge of shutdown.

The Bonneville study followed an earlier Council study which recommended increasing the amount of reduced-rate interruptible power sold to DSIs. Bonneville's study looked at other ideas from around the region, including variable rates that would move up or down along with world aluminum prices; paying for modernization of plants to reduce electrical use; and a continuation of the periodic rate reductions (the so-called "fire sales") that have been used in recent months. *–SE*

Theresa Titchenal of the Corps of Engineers counts adult fish passing through Bonneville Dam's second powerhouse. A tour of the dam and fish counting facilities was part of a media conference set up to tell the story of the water budget and the interagency cooperation it involves. The water budget is a unique project to help young fish reach the ocean safely (see story page 26). The conference was cosponsored by the Northwest Power Planning Council, Water Budget Center, Corps of Engineers, and Bonneville Power Administration.

Steve Nehl/Oregonian photo

FERC's new procedure assesses dam damages

The Federal Energy Regulatory Commission (FERC) adopted its staff's proposal for a Cluster Impact Assessment Procedure (CIAP) in April.

It's heartening news to some fisheries advocates who have argued with FERC that such a procedure was essential to determine the cumulative effects of siting more than one hydroelectric dam on any given stretch of a river.

The Northwest Power Planning Council also called on FERC to develop such procedures in its Columbia River Basin Fish and Wildlife Program.

The problem the CIAP will address occurs when two or more dams cause a string of damages to fish and wildlife in an area where one dam might have been less destructive.

If each dam is looked at in isolation from the others on that stream, the collective impacts of all the dams may not be accurately understood. Looking at all proposed and existing dams on a stream reach should provide a clearer picture of the implications of development.

"FERC's new strategy is a positive step," according to Ed Sheets, the Council's executive director. "There are many important issues that still need to be resolved. The Council is relying on the flexibility implied in FERC's procedure."

The first rivers to be treated to FERC's new assessment will include two from the Northwest, the Salmon River in Idaho and the Snohomish River in Washington, and one, the Owens River, in California. –CC

Screens, beds improved at Yakima Basin dam

Spring chinook and steelhead smolts trying to navigate past the Sunnyside Dam on the Yakima River will find the going easier this spring. Financed by the Bonneville Power Administration, fish bypass screens and changes in the river bed at the dam have considerably improved circumstances for the young fish.

The new screens were installed and operating in time to guide this year's migrants on their way down the river to the sea. They are the first of about 20 fish passage improvements in the Yakima Basin called for in the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. The Bureau of Reclamation is conducting the engineering review and technical oversight.

The old screens at Sunnyside, set perpendicular to the fast flow of water at the dam, tended to trap the young migrants rather than direct them back to the main river channel. To correct the problem, new state-of-the-art screens were set at a 45-degree angle to the flow of the river, and the dam's channel was widened and deepened to slow the water down.

Because of the large spawning habitat that still exists there, the Yakima Basin is important to the overall restoration of fish runs in the Columbia River Basin. Unfortunately, migrating fish trying to reach the habitat have to contend with severely reduced flows due to irrigation draws on the river, and inadequate fish passage facilities at most of the irrigation dams.

In the 1970s, returning spawners in the Yakima only numbered in the hundreds. Last year more than 2,000 adult returns were counted. A spawning survey last fall spotted more than twice as many salmon redds (gravel nests where eggs are laid, fertilized and hatched) than in the previous year. The increases are encouraging signs for the basin that once had more than 650,000 anadromous fish returning to it each year.

"The fishery agencies estimate that these projects will increase Yakima River fish runs tenfold," says Ed Sheets, executive director of the Council. "That's a good investment for ratepayers. It will restore salmon to one of the best habitats in the Columbia River Basin." –CC

Three committees aid in setting fish goals

Three new advisory committees have been formed to aid the Northwest Power Planning Council in its fish and wildlife program goal setting process.

The Losses and Goals committee will address salmon and steelhead losses attributable to hydropower development and operations, and goals for remedying those losses.

The Production Planning Advisory Committee will work basinwide to determine the potential fish production levels that can be achieved.

The third committee, Resident Fish Substitutions, will help the Council with strategies for those areas where anadromous fish are locked out by the dams. In these cases resident fish that do not migrate to the sea can be substituted for the lost salmon and steelhead resource.

Each of the committees has eight members, representing fisheries agencies, the basin's Indian tribes, the Bonneville Power Administration, other utilities and interested members of the public.

The Council will also be setting up a fourth advisory committee to look at hydroelectric system operations.

All advisory committee meetings are open to the public. Agendas and minutes of meetings are available on request. –CC

June Energy Expo comes to Northwest

The latest electrical products and information will be the subject of a three-day conference featuring 90 speakers and 120 exhibits at the SeaTac Red Lion Inn, June 18-20. Northwest Energy Expo 85 ("Progress through Partnerships" is its theme) is being sponsored by Puget Sound Power & Light, Seattle City Light, Tacoma Lighting Division and Snohomish County Public Utility District.

In addition, the Northwest Power Planning Council is one of 20 groups endorsing and participating in the Energy Expo. Others include a broad array of business, utility and city/county associations. Seminars and displays will explain the residential and commercial applications of model conservation standards, among other energy consuming and conservation methods, services and ideas.

The full three-day slate costs $125, but special arrangements may be possible. Call Jim Croft (206-462-3810) or Jim Kennedy (206-462-3748). Tickets are available at the site. Exhibits are free. –*SE*

Sunnyside Dam in Yakima Basin

Carlotta Collette photo

A NEW PLAN TAKES SHAPE

Public participation is key to its success

by Ruth Curtis

The Northwest Power Plan is a blueprint used to develop an adequate, efficient, economical and reliable supply of electricity. It affects not only the homeowner paying a monthly electric bill, but the economic health of the entire Northwest. The region's attractiveness to business and industry depends in large part on its supply of inexpensive electricity.

Because the Northwest is not static, but constantly changing, the plan is regularly examined and updated to maintain its relevance. This process is going on throughout 1985, two years after the first Northwest Power Plan was adopted. The Council is reviewing its assumptions and directions and rewriting the original plan to meet the region's changing conditions.

Work on the plan began with the Council analyzing the region's economic growth potential and developing a forecast of the expected demand for electricity. To meet this demand, renewable and nonrenewable resources, such as the Washington Public Power Supply System nuclear plants and coal plants, were examined to determine both their availability and cost effectiveness. Resources that are reliably available and cost effective are included in the plan's resource portfolio.

The Council is looking at the amount of conservation available in the Northwest and at programs, such as the model conservation standards, designed to capture that conservation potential. The plan treats conserved electricity as a resource in its own right, and in fact is required by Congress to give it first priority, as long as it is cost effective.

The Council also is looking at the way the electric system functions in the Northwest to see if it can be improved. What should be the roles of the different institutions in the region? Is critical water planning the best planning base to use? How useful are combustion turbines as supplements to the hydroelectric system?

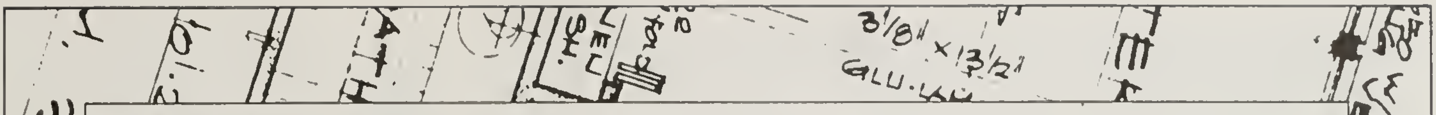
Particularly important are such questions as these: What is the future of the unfinished nuclear plants? What is the most appropriate power system treatment of the Northwest's aluminum industry? How should out of region power sales and purchases be structured? What role will conservation play in the region's future?

Throughout this process, public involvement plays a key role. Because so many people are affected by the plan, their input is necessary to make it relevant. "A key element of the Council's success is that all of its analysis is reviewed by the public and all of its decisions are made in public. This process improves the information and leads to a better plan," according to Ed Sheets, executive director of the Council.

The public has been involved since work began on the new power plan. Starting last summer, advisory committees and task forces were formed to examine and advise the Council on specific issues. Since early winter, these and additional issues have been discussed in papers that have circulated widely in and out of the region. Comments have been solicited and used by the Council in making preliminary decisions on the issues.

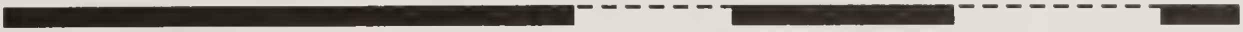
Both these issue papers and advisory committee meetings are announced in the newsletter, *update!*, which is mailed to more than 10,000 people. This spring, an advertisement was run in ten regional newspapers soliciting names for both the *update!* and the draft plan mailing lists.

The draft plan will be published this summer, providing yet another opportunity for the public to comment on any or all of the issues. The comment period will close near the end of September following hearings on the draft held in each state earlier that month. Dates will be announced both in the media and Council publications. In the fall, the Council will review all the comments received, make its final decisions, and write the 1985 power plan, which will be adopted in December.



1985 POWER PLAN PROCESS

1984 · NOV · DEC
1985 · JAN · FEB · MAR · APRIL · MAY · JUNE · JULY · AUG · SEPT · OCT · NOV · DEC



Issues discussed with task forces. Papers prepared on issues and presented to the Council, then distributed to the public for comments.
The Council uses this input to make decisions for the draft power plan.

Public involvement questionnaire

Draft power plan prepared

The Council adopts the draft power plan. It is printed and distributed to the public for comments. Hearings and consultations are held in each of the four states.

The Council reviews the comments received and makes its final decisions. The 1985 Power Plan is written and adopted.

NOTE:
Dates shown are only approximate at press time and will be refined. Call the Council's central office for exact dates. The Council meets every three weeks and allows opportunities for oral comment. See calendar on page 2 for meeting dates and locations.

Public information and involvement questionnaire

When work began on the new power plan last fall, this magazine published a public involvement questionnaire. The Council wanted to be sure that the people of the Northwest have access to information on the decisions being made and opportunities for involvement in those decisions.

"The people who responded to the questionnaire were very helpful in showing us where our program was succeeding and where there were problems," says Dulcy Mahar, director of public involvement for the Council. "We'd like to thank every one who took the time to fill it out and send it in."

While most of the respondents felt the Council's information system keeps them well informed, many were not aware of all the opportunities for public involvement.

The most common concern expressed was how hard it was to get to Council meetings. The meetings, held in all four states, are generally located in major metropolitan areas, with good travel connections, to save time and money. These cities are also often the state's media centers (several people thought the Council should improve its media coverage).

To help people who cannot attend meetings stay informed, a synopsis of each meeting is sent out with the agenda for the next meeting. *update!* was also introduced to publicize issue papers which deal with the items on meeting agendas and to provide information and deadlines for written comment. All written comment which meets the deadline is reviewed and is given the same weight as any other comment received.

There were a variety of views on the Council's publications. Some people thought they were too technical, while others felt they were not technical enough. The Council does provide different levels of publications. Articles in *Northwest Energy News* are intended to help the layperson understand the Council's work. Issue papers and staff reports go into more detail and so are necessarily more technical and may require some background knowledge.

A few people mentioned they didn't know whom to call for information or updates on various issues. Callers need only call one division, Public Information and Involvement, at the toll free numbers listed below. If this staff doesn't know the answer, it will find it, or route the caller to the appropriate person.

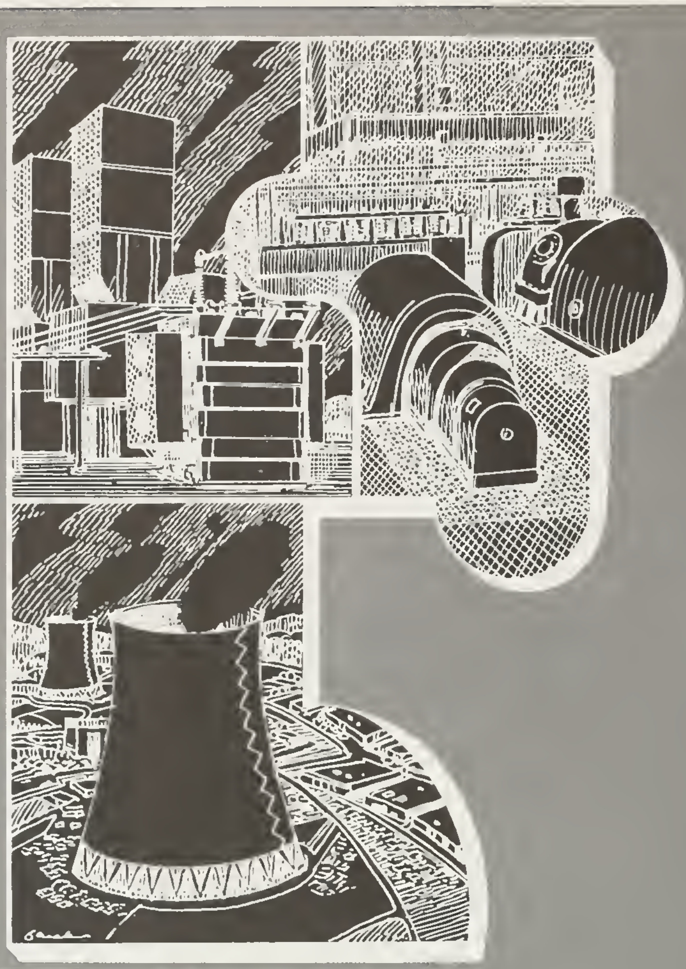
GET INVOLVED IN THE 1985 POWER PLAN

1. Use the order form on the back cover to order the Draft Power Plan (available this summer).

2. If you are not already receiving the newsletter, *update!*, use the same form to be added to its mailing list. The newsletter comes out every three weeks with the Council meeting agenda and describes available publications, meetings, and other opportunities for public involvement.

3. To get more information, call the Council's Public Information and Involvement Division at 1-800-222-3355 in Washington, Idaho, or Montana, 1-800-452-2324 in Oregon, or 503-222-5161. Or call your state Council office (see page 2).

4. Let the Council know what you think about the Draft Power Plan. Either send your comments to the central office (see page 2) or appear at a hearing in your state (schedules will be sent out in *update!*).■



Rethinking Resources

New developments in the regional power plan

by Steve Engel

Frank Farah illustrations

Three major developments confront the Northwest Power Planning Council in its efforts to shape a 20-year resource portfolio for the new regional power plan. Among the changes this plan will present to the region are the following:

1 Reduced forecasts of new demand, along with lesser amounts of new resources.

2 New ways to use nonfirm energy more efficiently, involving out-of-region purchases, combustion turbines and increased sales of interruptible power to the aluminum industry.

3 A breakout of resources and loads for the public and private utilities that shows a significant split between when the two groups will need new energy resources (see separate story).

Less power needed

In the working stage of the resource portfolio, the staff see less new hydro than during the 1983 plan, less new conservation—and a greater likelihood that Washington Public Power Supply System nuclear plants 1 and 3 will be needed in only the higher load growth scenarios. (Early results suggest a likelihood of postponing completion of these plants for a considerably longer time. They are being analyzed in comparison with other new resources in this portfolio, while in 1983 they were considered part of the resources either existing or under construction.)

A regional growth forecast significantly lower than that in the 1983 plan is a central reason for planning lesser amounts of new resources. The four demand scenarios have declined an average of 12 percent from the 1983 projections — primarily because the economic recovery anticipated in 1983 is beginning later for the Northwest.

Reduced projections of economic activity, and consequently of population, mean less load — and fewer opportunities for conservation than were shown in the 1983 portfolio. Preliminary staff work at the Council indicates that the conservation available for the 1985-2005 planning period is about 12 percent less than the 5,500 megawatts in the 1983 plan. Conservation numbers include energy savings expected from tighter new buildings, and from irrigation, commercial and industrial efficiencies. (The amount actually achievable runs lower, because of different levels of market penetration and the varying effectiveness of programs.)

New information and policies also influence some of the proposed reductions. For example, new hydropower resources in the portfolio may amount to little more than a quarter of the 920 megawatts in the 1983 plan. According to Jeff King, Council resources analyst, this reduced amount includes all known potential developments consistent with the Council's fish and wildlife program and with other environmental considerations. It excludes previous sites that would produce peak output at times the rest of the hydrosystem could not efficiently accommodate the energy. Almost all of the new hydro proposed for this portfolio would be added to existing projects or would be installed on irrigation and flood control projects. Costs to the region would, of course, be lower than if the hydro generation required entirely new structures.

New nonfirm strategy

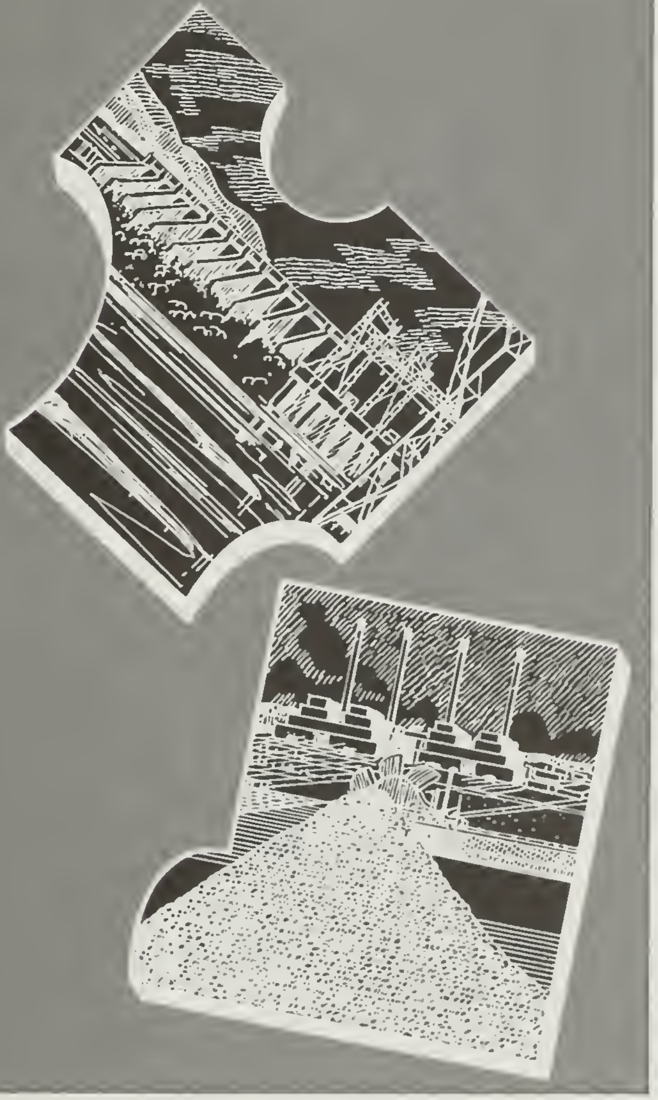
An important opportunity for developing less new generation is being explored in the preliminary resource portfolio. It involves a proposed new strategy for managing the region's nonfirm surplus energy — primarily by developing ways of making it more reliable, or firm, and by using it to serve more of the volatile aluminum company loads.

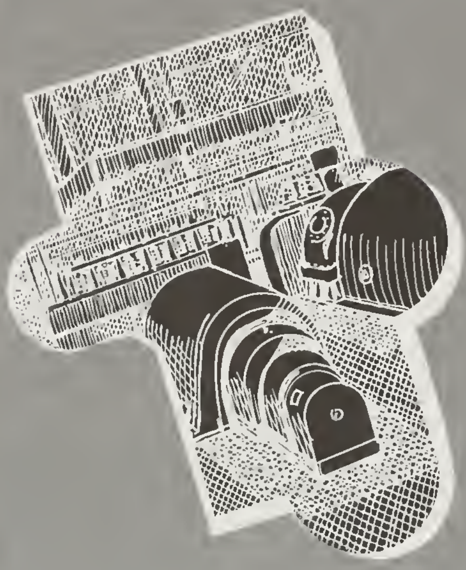
Nonfirm energy is the amount available in all but "critical water" (historic low) conditions. The amount varies with weather and snowpack. It is called nonfirm because it is not available every year. The regional power system is currently required to plan resources that will meet firm contracts even during low water years. In most years, available hydropower exceeds critical water by a considerable margin — on average by about 3,500 megawatts, enough power to supply the needs of 3.5 cities the size of Seattle for a year. When it's available, this excess or nonfirm energy is sold to regional and out-of-region customers.

Currently, the aluminum companies rely on nonfirm — or interruptible — energy for one fourth of their load (about 1,000 megawatts). This portion of their load is said to be "operated as if firm," however, because Bonneville is obliged to use all the flexibility of the hydro system to maintain service.

In recent years, rising electricity rates and falling world aluminum prices have pushed several of the region's aluminum smelters to the point of shutdown. The

New hydropower resources may amount to little more than a quarter of the amount in the 1983 plan.





The Council is also exploring the use of combustion turbines or out-of-region purchases to meet firm loads in higher forecasts.

future of this industry poses several important challenges for the region. First, the industry employs over 9,000 people directly and supports many more indirect jobs. Second, aluminum operations provide a significant part of the Bonneville Power Administration's revenue. If a portion of these smelters were to go out of business, other Bonneville customers would pay higher rates until the additional surplus power could be sold.

Third, the industry is extremely volatile. The long-term future is uncertain for many of this region's older, less efficient plants. In the short term, many of the Northwest plants "swing" with the price of aluminum — as the price falls, these plants are shut down temporarily. During the last five years, power use by the aluminum smelters has fluctuated by approximately 1,000 megawatts, or 10 percent of Bonneville's load.

The problem facing power planners is how to deal with this volatile load, according to Council Executive Director Ed Sheets. "At some point, utilities may have to decide whether they will pay over a billion dollars to restart a nuclear plant or build a new coal plant to serve a load that may go out of business during the next 20 years," Sheets says, adding, "It's very hard to make a good business decision under those circumstances." Sheets points out, "Power sales contracts for the aluminum companies obligate Bonneville to serve their 3,000 megawatt firm load. That means the future of this industry is extremely important to power planners. It also means there are benefits to reducing the uncertainty associated with this load."

A solution the Council has explored would help the aluminum smelters stay in business and would reduce the need for new firm resources in the future. It would involve voluntary arrangements to give the smelters rate discounts in return for increasing the interruptibility of their power supply. The Council's staff analyzed a case where an additional quarter of the aluminum company load became interruptible in return for a 9 mill (.9 cents) per kilowatt hour reduction on that 1,000 megawatts. This plan would mean a loss of revenue for Bonneville in the short term. In the long term, though, the region would be able to avoid building expensive new power plants.

"We found that this example would have a net benefit for the power system of more than $1 billion," says Wally Gibson, Council manager for system analysis and rates.

"A key element of this proposal is developing mechanisms to protect the employees and local communities that serve the aluminum plants," says Kai Lee, a Washington Council member. "If a billion dollars in benefits are on the table we ought to be able to work out creative solutions to the problems."

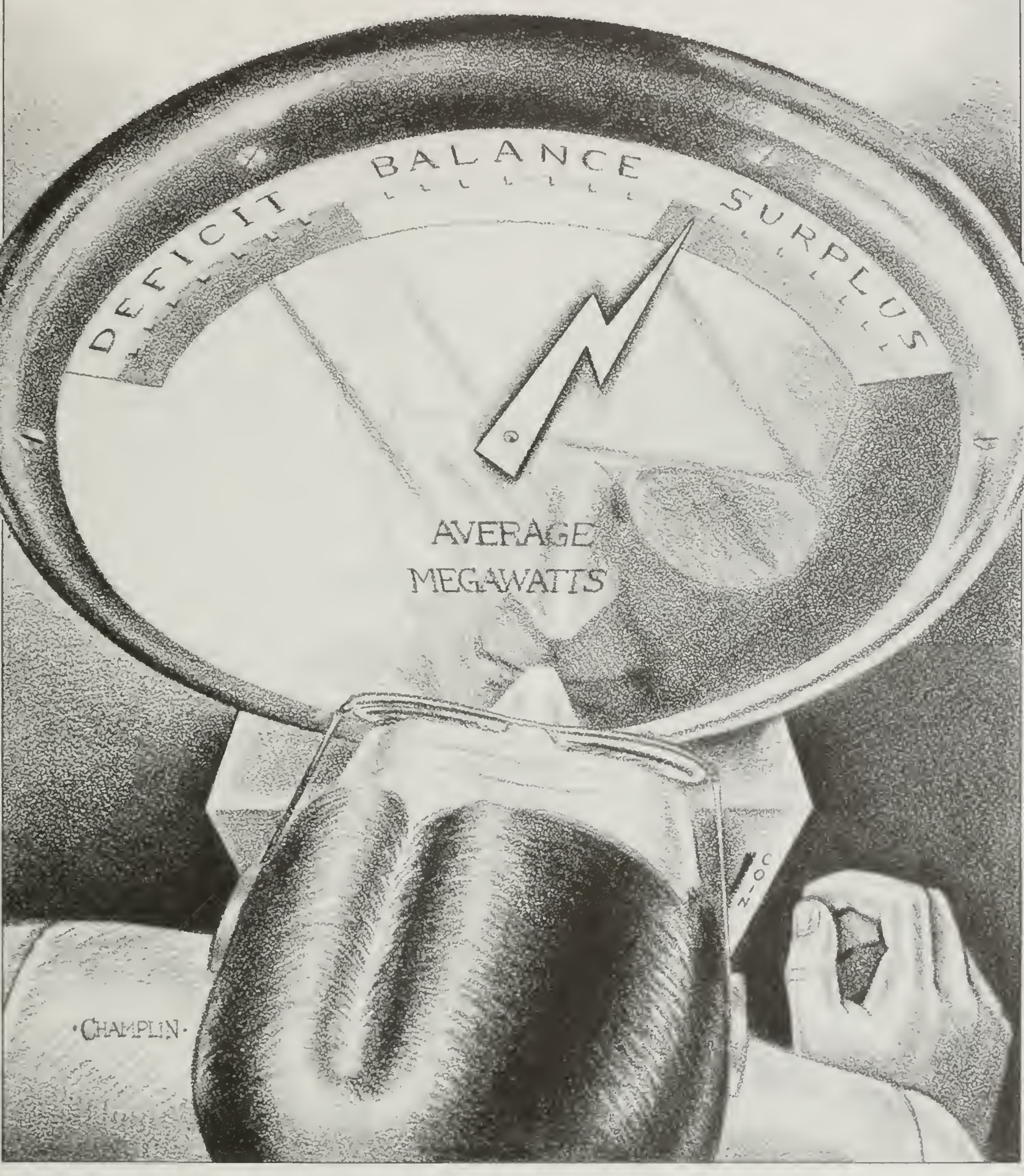
Another idea being explored by the Council is to use combustion turbines or out-of-region purchases to meet firm loads in higher load forecasts. Both Canada and California have resources that Bonneville could import for short periods. Combustion turbines (small generating units run on oil or natural gas) appear to be cost effective and reliable ways of firming up nonfirm energy. They are cheap to build and, though expensive to operate, would only be needed about 16 percent of the time, Council studies estimate. Staff is looking at the inclusion of as much as 2,000 megawatts of nonfirm energy, particularly in the higher load growth scenarios.

If the DSIs continue to operate at high levels in the 1990s, utilities might then decide to build a base load resource to replace the combustion turbines or purchases.

The preliminary draft resource portfolio is undergoing extensive analysis, to establish the selection and sequence of all resources that will provide the least expensive and most reliable energy. This portfolio will be published in the draft plan due out in late July. ■

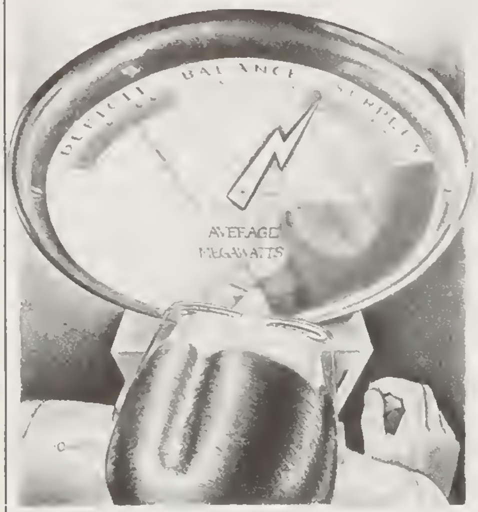
WEIGHING NEEDS

BUILDING A PLAN TO WORK FOR BOTH PUBLIC AND PRIVATE POWER



Dale Champlin illustration

WEIGHING NEEDS



by Carlotta Collette

When the Northwest Power Act envisioned power planning for the Pacific Northwest, the Bonneville Power Administration was seen as the lead developer and marketer of that power. The first power plan (adopted in 1983) anticipated a coalescing of utilities (both public and private) under the Bonneville umbrella. Bonneville was expected to acquire all new resources for the region, and the region as a whole would use existing resources efficiently to stretch them out over a longer period.

It was a logical assumption given Bonneville's ability to spread the risks of over- or under-building resources and its access to lower interest rates to finance new generating resources. In fact, the Act could compel Bonneville to meet the energy requirements of the entire region, including the public utilities (PUDs), the Direct Service Industries (DSIs — primarily aluminum smelters) and the investor-owned utilities (IOUs).

But only 44 percent of the total regional electric load is now being served by Bonneville. Only one private utility (Puget Sound Power and Light) has a contract for Bonneville to supply a small part of its power. The rest of Bonneville's market is made up of 117 public utilities and 15 Direct Service Industries.

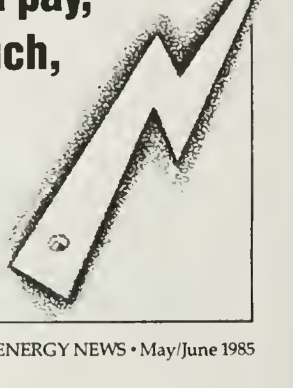
A new complication has emerged — the Council's preliminary analysis points to the likelihood that Northwest public utilities will experience electricity surpluses for a longer period than the private investor-owned utilities. The private utilities (which are currently only minimally served by Bonneville) may need new generating resources in as few as eight years, if energy demand grows at a fast pace. And Bonneville is no longer seen as the only port in bad weather. Utilities, like ships, may be pulling in elsewhere, or dredging their own harbors. The Council's planning staff has been trying to anticipate who will turn where, under what circumstances and approximately when.

One thing is certain: if the Council's new power plan is to effectively accommodate the future electric needs of the *region*, the remaining 56 percent of the electric load should be participating in the planning process. According to Jim Litchfield, director of the power planning division at the Council, the institutions that are particularly important in establishing the region's energy policies are: (1) *all* utilities, including Bonneville, public and private utilities; (2) the state public utility commissions which regulate the private utilities; (3) state and local governments which represent consumers and are often called on to legislate aspects of power planning (as in the model conservation standards which must be adopted by bodies other than the Council); (4) state energy offices; and (5) direct service industries.

Given the apparent imbalance of resources between the private and public utilities, and the fact that potentially available new power generators (such as the Washington nuclear plants 1 and 3) are mostly owned by the publics, the Council has come up with three possible strategies for determining Bonneville's role in future resource acquisitions. These strategies are simply starting points to draw a broader circle together to identify actions that will ensure the most cost-effective electricity is there when the *whole* region needs it.

In the first planning strategy Bonneville would continue to be treated as the resource developer and provider for the entire region. The concern with this strategy stems from Bonneville's need to spread its expenses out over all its purchasers. If new resources are developed now, specifically to serve the private

The big questions boil down to: who should pay, for how much, and when?



By raising the issues, the Council hopes to bring the best minds in the region to work together.

utilities in their future need, public utilities and DSIs could pay disproportionately for power they may not need for quite some time.

The second alternative calls for Bonneville to be the primary supplier and developer for only the public utilities and the DSIs, recognizing the situation that pretty much exists now, but assuming only limited future Bonneville requirements from the privates. The private utilities remain essentially on their own. They would develop their own resources when they need them. They could still buy power from Bonneville when it's available, but new generating potential would be the responsibility of the investor-owned utilities themselves. Bonneville would serve the public utilities and the DSIs. The major drawback in this strategy is the loss of regionwide risk sharing and cooperation as seen in the Northwest Power Act.

The third possible process would have Bonneville continue to be responsible for acquiring *major* new resources, while the IOUs purchase their own conservation and develop smaller generating projects to extend their surplus as far as possible. When the IOUs need significant new power, they would turn to Bonneville (with seven years prior notice according to current power sales contracts). The public utilities are spared the expense of developing electricity they don't need, and the private utilities have Bonneville, as the regional entity, there to cushion risks and lessen interest rates for developing major new thermal power.

The big questions boil down to: who should pay, for how much, and when? They are difficult to answer because the rates process and resource allocations in the Northwest are extremely complex. Take, for example, the case of conservation. If an IOU turns to Bonneville for more power, Bonneville may choose to secure that power from the public utilities in the form of conservation, because it is the least expensive resource. Given the size and possible duration of the public utilities' surplus, how much conservation should they be called on to provide? How can conservation, as the most cost-effective resource, be acquired from the publics and sold to the privates which need it? The publics will be paying for conservation that the privates need, and because of rate pools contained in the Act, the publics may be unable to charge the privates the full cost of acquiring those resources.

"By identifying and raising these issues, the Council hopes to bring the best minds in the region to work toward developing mechanisms that will enable the private utilities to purchase conservation resources from the public utilities instead of turning to more expensive generating resources," Ed Sheets, the Council's executive director explained.

Right now there appear to be substantial impediments to an easy transfer of conservation resources. This could result in a situation where the region is building expensive coal plants to meet private utility demand, while inexpensive conservation opportunities — weatherizing buildings in public utility service areas — go untapped. "In essence, half of the region would have developed its own conservation and would be paying substantial sums for new generating resources, while the other half would be holding undeveloped, low cost conservation resources for want of the demand to justify their development. Certainly this is precisely the type of outcome the Northwest Power Act was enacted to avoid," Sheets said.

The apparent lack of mechanisms to transfer resources from public utilities to privates also affects the fates of two mothballed nuclear plants owned by the Washington Public Power Supply System.

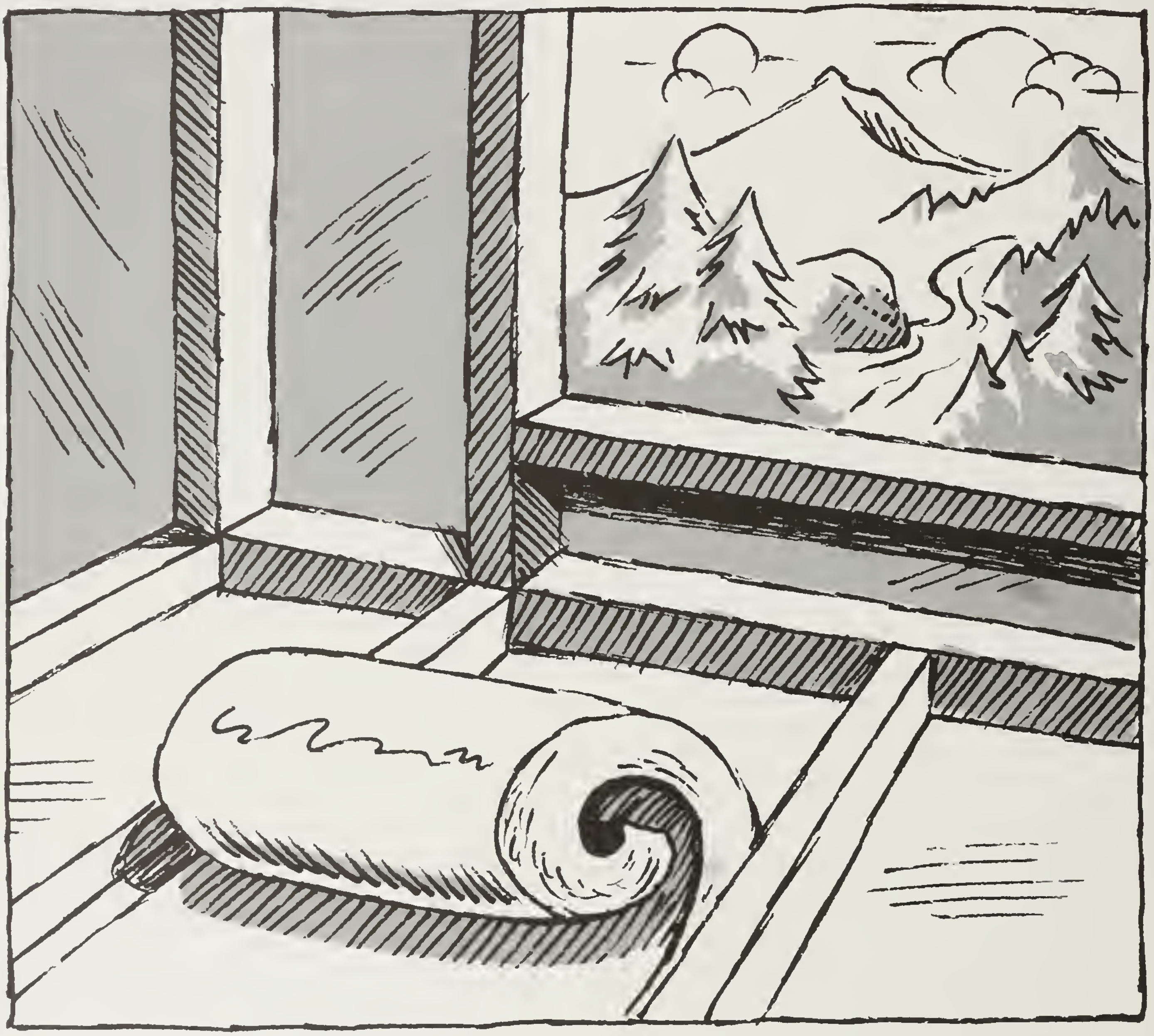
If the private utilities place loads on Bonneville that use up the Bonneville surplus and other less expensive resources, and new thermal resources are called for, the nuclear plants could be more cost effective to complete than building new coal plants. But the tab for maintaining them in a state from which they can be cost-effectively restored and completed would be picked up by the utilities which own them.

In other words, the region's public utilities, which have a long-term surplus of power, would foot the bill (between $24 and $72 million each year for the two plants) to hold onto assets that will most likely be needed first by the private investor-owned utilities. Furthermore, when and if those plants are completed, their costs will be added to the rates paid by the public utilities, the exchange customers and the DSIs, as well as the IOUs which need the power.

The Council's mandate is to provide for the future electric energy needs of the region with the most cost-effective resources available. The split between the needs of the investor-owned utilities and the publicly-owned ones presents new problems.

"Equitable energy investments," notes a Council issue paper on the subject, "in capability building, new resource research and development, and ultimately the development and completion of additional thermal resources will be critical to the overall achievement of the lowest cost energy future for the region." ■

CONSERVATION:



Read Darmon Illustrations

it still makes sense

by Dulcy Mahar

It's been called the "new Grand Coulee" and "stretching the river." The heroic imagery refers not just to energy conservation . . . but to a new way of looking at energy conservation. Under the Northwest's unique planning system, conservation is considered the equivalent of a generating resource rather than a reduction in energy demand.

In 1973, the world oil crisis spawned a new nationwide spirit — the conservation ethic. Less than four years later, when low snowpacks threatened to produce industrial "brownouts" and the Bonneville Power Administration issued "notices of (energy supply) insufficiency" to its customers, that energy conservation ethic was brought home dramatically to the Northwest.

Today, energy conservation is still a hot topic. But today it's controversial because the Northwest has an energy surplus which could last for up to a decade or more. Now there are those who are beginning to question the need for any conservation during what could be a long-term surplus.

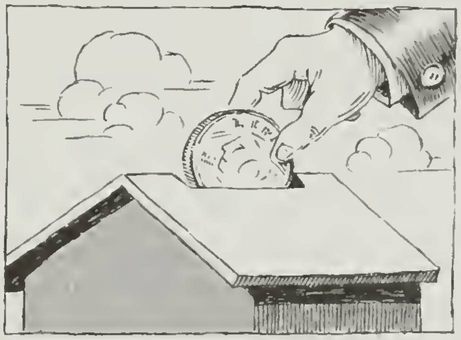
The Northwest Power Planning Council is not among the doubters. As was the case in its 1983 plan, the Council's new 1985 plan will use conservation as its premier new resource. For one thing, Congress, through the Northwest Power Act, mandated "an energy conservation program to be implemented under this Act, including, but not limited to, model conservation standards." To underscore its importance, Congress gave conservation a 10 percent price advantage. This emphasis on conservation is not to say that the Council doesn't carefully question and analyze how much conservation and what type should be developed.

There were a number of reasons the Congress put such heavy emphasis on conservation and a number of reasons why the Council considers that emphasis so vital — even during a time of surplus.

Conservation is the ideal resource for reducing planning uncertainty.

Saving an opportunity

First, and probably most relevant to the current debate, a surplus is by its very definition temporary. The current surplus may be around five, ten, fifteen . . . or more years. But it's not likely to last 40, 50, or 60 years. Houses built today, however, will last that long — some as many as 100 or more years. And those houses, built to today's codes and practices, will continue to swallow up electricity at an inefficient rate long after the surplus is history.

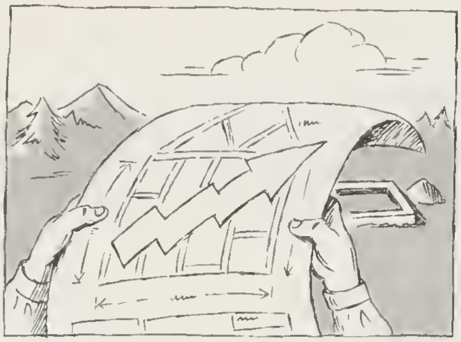


Not only is retrofitting buildings with energy efficient features more expensive than building them efficiently in the first place, it will not produce comparable energy savings. In some cases, retrofitting isn't even feasible. For this reason, the Council put its emphasis on model conservation standards for new buildings.

The potential for losing an opportunity exists in other sectors as well. For example, industry decisions made today on whether or not to build cogenerators* will affect the availability of that useful resource in the near future. Major capital investments in inefficient industrial and irrigation equipment may not seem to be much of a problem now, but such new purchases as old equipment wears out will prolong the use of energy-draining techniques in future years when the energy may be needed.

*Cogenerators produce electricity as a by-product or concurrently with other processes.

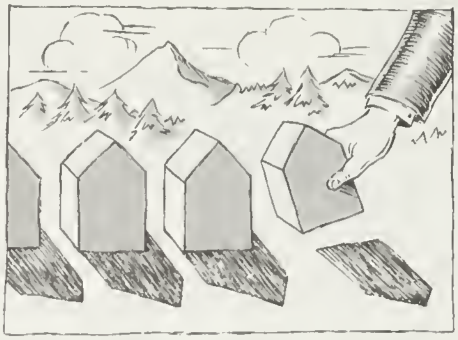
When the region's surplus does evaporate, the Northwest will not be able to flip a switch and turn on any resource instantly.



Building the capability

When the region's surplus does evaporate, the Northwest will not be able to flip a switch and turn any resource on instantly. The resource does not spring fully mature like Venus rising out of the sea. Conservation may indeed be the most flexible of resources, but even its programs need to be developed, tested, modified and maintained to ensure that they are available and reliable when needed. The capability to conserve energy must be built over time.

The general aim of the Council's program is to build the capability of the region's conservation system to ensure that as the current power surplus diminishes, Bonneville, utilities, state and local governments, and the private sector will be able to acquire cost-effective conservation at a pace geared to meeting long-run conservation targets. In addition to bolstering the region's conservation systems, the programs are designed to promote efficiency, diversity, competition, and equitable distribution among the various sectors in providing conservation services.



Reducing the risk of uncertainty

Conservation is the ideal resource for reducing planning uncertainty. It can be acquired in small increments, each of which begins generating (saving) energy immediately. Because there isn't a lengthy period of siting, licensing, design and construction for conservation, it can be modified quickly and easily to respond to changing conditions. The energy "generated" can be concurrent with or closely following the capital investment. This allows a close match of resources with needs.

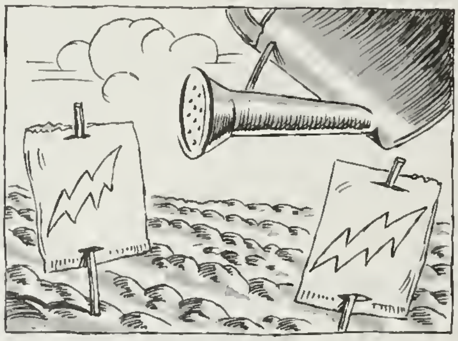
On the other hand, major electric generating plants with long construction periods require critical decisions many years before the power might be needed. A coal plant for example can take ten years to complete, while a new nuclear plant might take more than 16 years. Long lead times increase the risk posed by the uncertainties inherent in energy planning.

Regional planners don't know what will happen in ten years. If the Northwest were to need a new coal plant in 1995, it would have to commit to the resource now. With conservation, the region can develop it in increments — such as through a series of programs. By 1995, these programs could equal the output of the coal plant.

The most flexible resource

Conservation is the most flexible resource because, once a program is designed, it can be scaled up or down. Conservation programs can be initiated quickly, and the rate of implementation can be adjusted over time to fit actual needs.

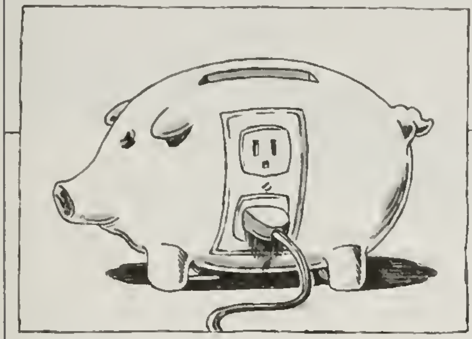
The Bonneville Power Administration's residential weatherization program is an example. The program has been tested and proven. In response to the current surplus, the program is being held at current levels of activity. If the region were expecting more rapid energy demand growth, the program could be expanded by increasing marketing efforts and paying larger incentives. At current levels, the program can be preserved and maintained so that when higher load growth returns, the region can quickly increase the rate at which weatherization savings can be acquired.



Growing with need

One of the beauties of conservation is that, unlike any other resource, the more it is needed, the more of it is available. If the region experiences high population and economic growth, more electricity will be needed. But, because more homes will be built, the potential to conserve electricity will increase proportionately. The actual rate of conservation development from now to 2005 (the Council uses a 20-year planning period) will depend, in large part, on the level of population and economic activity that occurs. Thus, the Council's resource portfolio for its high growth forecast contains significantly more conservation than that required under its low growth forecast.

If the Northwest has a "spirit" or "ethic" that is uniquely ours, it's a concern for the environment.



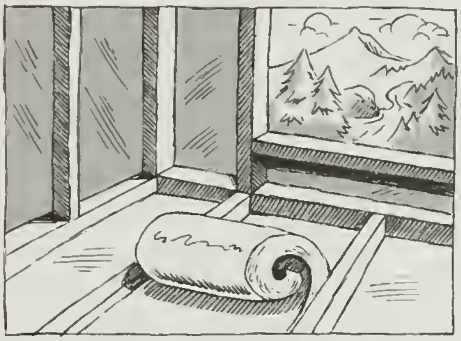
Saving the region money

A resource is inexpensive only in comparison to other resources. The Council considers a resource cost effective if it produces power at an "incremental system cost" less than another resource. This means that conservation, per se, is not used in the Council's planning resource portfolio, but only that portion of conservation that is cost effective relative to other resources — and meets the tests of availability and reliability that other resources must meet.

In the first plan, a 4 cents per kilowatt hour limit was selected for conservation. No measure which cost more than that was included. The limit represents a level of conservation investment that, in the Council's analysis, is cheaper than any thermal power plant that might have been needed in the 20-year planning period. The same principle — using only conservation that is cheaper than the cost of new thermal (i.e. coal) — will be applied in the new plan. The actual cost figure will be adjusted in the 1985 plan due to inflation, but the cost relationship to other resources will remain the same.

In determining costs in its original plan, the Council chose to measure costs from the perspective of the ratepayer as a whole. For example, conservation costs are measured as the total cost of installing a measure, regardless of who pays what portion of the cost of the measure — the ratepayer directly or the ratepayer acting through the utility. The Council opted for a policy of determining cost effectiveness on the basis of "life cycle" costs and benefits. Under this policy, the region would acquire those resources which over their entire life provide lower incremental system-costs than the operation of the current system plus new resources. This policy reduces the region's revenue requirements.

As for the effects on ratepayers, the Council isn't claiming that widescale implementation of conservation measures will keep electrical rates from rising. But the acquisition of new resources in order of cost effectiveness (that is, developing the lowest cost resource — conservation — first) should keep any rate increases significantly smaller than they would have been otherwise.

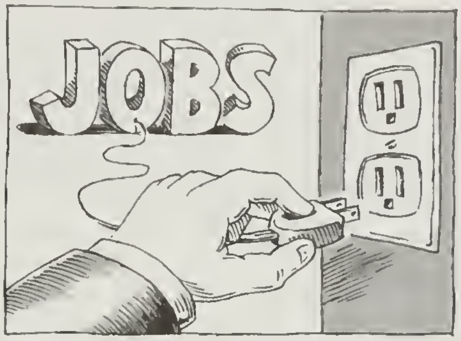


Considering the environment

If the Northwest has a "spirit" or "ethic" that is uniquely this region's, it is manifested in a concern for the environment. The environmental benefits of conservation are substantial. First, reducing the need for new electricity can help the region avoid or keep to a minimum the construction of conventional energy resources with their accompanying environmental impacts.

Since conservation "generates" electricity without fuel or transmission lines, it eliminates most of the air or water pollution, noise, solid waste, or land use impact associated with other resources. The production of conservation devices (insulation, storm windows, etc.) may include some environmental impact, but the impact relative to the amount of electricity "produced" is vastly more benign than the impact on the environment of a coal plant producing the equivalent amount of energy.

Environmentally, conservation compares favorably to hydro resources as well as thermal resources. Conservation is not likely to harm fish and wildlife.



Supporting the economy

The economic effects of widespread energy conservation could have an enormous ripple effect. Certainly, cheap electricity is what drew several industries to the Northwest in the first place, and anything that gives the region a competitive edge in electrical costs will not only help retain industry already here but will continue to attract more development.

There is also evidence that conservation itself is a job-intensive industry. In 1984, the Washington firm of H. Glen Sims and Associates released a study commissioned by the Northwest Conservation Act Coalition which indicated adoption of the Council's model conservation standards would create nearly 19,000 Northwest jobs and generate $137 million in business income annually. The report compared the benefits of saving energy by constructing new energy efficient buildings with the benefits of producing that energy from new coal plants. Over the lifetime of houses built in the ten-year period covered by the study (1992-2002), the region could increase its employment by more than 180,000 job years.

There is also the economically-related fact that the Northwest's environment is a selling point to businesses and individuals moving into the state and to tourists visiting it. It may be hard to measure the effect. But anyone who has ever been asked the question "Where are you from," knows it is a factor if they have ever gotten the response: "Oh yes, you're from God's country."■

MODEL CONSERVATION STANDARDS

The council considers a phased approach

A decision on how — and whether — to revise the schedule for regionwide adoption of the Council's residential model conservation standards (MCS) was set for the June 5-6 meeting of the Northwest Power Planning Council, in Portland, Oregon.

As this article went to press, the Council was contemplating two courses of action: to enter rulemaking that would amend the residential MCS portion of the Regional Energy Plan by July; or to include the issue in the overall plan revision process that begins in July when the Draft Plan is issued and concludes with adoption of the new plan this December.

Motivating an early rulemaking process, according to Council Executive Director Ed Sheets, is "the need to give utilities and local governments as much notice as possible of what they have to do in the coming year."

The staff proposal to phase in the MCS calls for utilities to announce by January 1986 their plans to meet a January 1987 Phase One deadline.

The Council staff proposed this phased scheduling in a March 1985 issue paper reviewing the standards for the new plan. Phase One would include all elements of the present standards except for walls with insulation levels higher than R-19 (R-levels indicate insulating effectiveness) and the air infiltration package (a continuous air/vapor barrier and air-to-air heat exchangers). Phase Two would require these measures in building codes or alternative packages by January 1989.

The current Northwest Power Plan, developed by the Council in 1983, calls for adoption of the entire MCS package in all Northwest jurisdictions by January 1986. Utilities in jurisdictions which do not attain the standards—either through building codes, incentives, marketing programs, or a combination of all three — could be subject to a 10 percent surcharge on electricity they purchase from the Bonneville Power Administration.

The reason for the surcharge is to recover additional costs incurred because the electric energy savings attributable to the MCS have not been achieved. Among these costs would be the purchase of new generating resources.

According to studies by Council staff, phasing in the standards would cost the region $23 million in energy savings. But according to Ed Sheets, "the additional time provided by new deadlines will give more builders the chance to learn how to install the measures cost effectively. We also expect the market to mature during that period, improving the quality, cost and availability of energy-saving products."

Early cost data from a regionwide builder training effort, which was not designed to be a cost test, showed that 85 to 100 percent of the participants could achieve cost-effective installation of almost all building components necessary to meet the standards. (Cost effectiveness means at or below the Council's cut-off point — 5.5 cents per kilowatt hour.) The exceptions to this success rate occurred for some builders of R-25 and R-31 walls and with the infiltration package. Even on the first attempts, between 50 and 80 percent of the builders were able to stay below the cost effectiveness levels on these items.

by Steve Engel

Data from this Residential Standards Demonstration Program "can't be considered fully representative of all builders in the region," Sheets said. "These are trainees learning new techniques, and their first results no more show what they can do than the first-day products of a typing class predict the ultimate skill levels." Sheets added that the numbers are based on a sample of only 110 homes, and that not all the information has been reported yet. Nonetheless, he said, the trends are reinforced "by written comment and anecdotal information from early adopters of the standards."

Public comment on the phasing proposal has lasted six weeks, bringing a range of views and information. At the Council's meeting in Seattle, April 24-25, several commenters urged the Council to accept the newly passed Washington State building code as a sufficient response to Phase One of the model conservation standards. The new Washington code calls for double- rather than triple-glazed windows, and sets lower R-values for doors and floors. "This code achieves approximately 80 percent of the Phase One energy savings," Sheets observed.

Several commenters expressed the belief that the Washington code would meet the Phase One standards if it is accompanied by extensive market penetration of the Super Good Cents homebuilding program, and perhaps by utility-sponsored incentives to build to Phase Two standards.

Mayor Doug Sutherland of Tacoma, the region's first early adopter of the standards, argued that the phased approach was too extreme a reaction to "a temporary inefficient adjustment period" that would occur anytime a market attempts new practices. He urged that the Council "maintain the momentum it has started." However, acknowledging "the likelihood that you will delay part of the standards," Mayor Sutherland said he hoped the Council and Bonneville would "use the year to work with manufacturers to assure that tested products are available." ■

The proposed Phase One of the residential model conservation standards still calls for extensive insulation (shown being unloaded below) and other heat loss prevention measures. Phase Two, beginning two years later, would require air/vapor barriers, such as those being installed in bottom photo, and air-to-air heat exchangers. The delay would enable more builders to acquire specialized installation skills and would give time to develop a good supply of proven products.

Oregon Department of Energy/Seattle Times photos

PACKAGING POWER

OUT-OF-REGION SALES

by Steve Engel

In recent years, the Northwest utility industry has fastened large hopes to the plan of selling its surplus electricity in hungry Southwest markets. Those revenues could help pay for resources, soothe ratepayers, and — for those who care about such things — raise profits.

Although out-of-region sales brought more than $700 million to the Bonneville Power Administration and other Northwest generating companies during 1984, potential sales could far exceed that amount. One obstacle to shipping more power south has been the limited capacity of the transmission lines — the Northwest-Southwest Intertie. This bottleneck also pushed prices down, because competitors could only guarantee themselves access by underbidding each other for buyers.

In 1984, a series of negotiations with California interests produced a memorandum of understanding to finance and construct a third interregional AC transmission line. This 1,600 megawatt, $450 million project would expand intertie capacity by a third.

Meanwhile, from September through December 1984, Bonneville's new Near-term Intertie Access Policy brought $98 million more from California utilities than during the same period a year before. The policy provided higher price levels, along with more equitable allocation formulas for the tieline. In addition, the policy freed up transmission capacity by bumping cheap British Columbia hydropower to the back of the priority list.

In another move to increase sales opportunities, a number of Northwest utilities joined with Bonneville to pursue an Agency (or System) Sale — an agreement to pool their surplus energy for the purpose of fashioning long-term contracts. Such contracts command a

Elsa Warnick Illustration

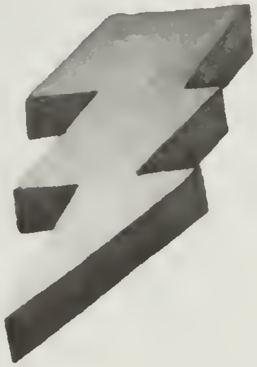
higher price because they're more reliable than interruptible or short-term agreements, they permit the buyer to defer new resource investments, and they extend into the years ahead when power will cost more.

But few other areas of endeavor, even in the uncertain world of electrical marketing, are subject to such rapid whiplash as out-of-region power sales. The region's sellers may soon be forced to reassess their ideas about how to sell more power to the sunny Southwest. Among the cherished assumptions suffering confrontation these days are that the demand in the Southwest is enormous, that acquiring more transmission capacity would clearly benefit both regions, and that long-term contracts would be a major factor in nailing down more markets.

Almost before the ink had dried on November's third AC intertie memorandum of understanding, reports from the California Energy Commission, the California Public Utility Commission and several utilities expressed severe doubts about the economic benefits of investing $350 million in the project (the California share). These groups argue that the potential market is much smaller than projected, demand is growing sluggishly, and the price of fossil fuel has dropped to the point where it can generate electricity for 3.3 cents per kilowatt hour.

"Basically, the Californians are engaging in a little pre-negotiation posturing," asserts Rod Boucher, Pacific Power and Light's vice president for power resources. Boucher calls it "playing Electric Chicken. We see who swerves first. They really need the power now and they'll need it even more in the future. But they'd like to get a lower rate from the Northwest."

Boucher acknowledges that the entire Southwest is overbuilt with thermal resources, and most of the new plants are low-operating-cost nuclear facilities. But he also points out that California utilities saved an estimated $2.5 billion last year by using imports to displace their thermal resources. He believes they aren't likely to turn down an energy faucet that would pay for itself so quickly.



> **"Last year was the first time we got a fair price for our power."**
>
> *–Merrill Schultz*

Of course, the savings won't be as large because Northwest power isn't as cheap as it used to be. Northwest sellers, at least, are pleased about that. "Last year was the first time we got a fair price for our power," says Merrill Schultz, executive director of the Intercompany Pool, an association of private utilities. In a phrase repeated by several of the region's exporters, Schultz says Bonneville's new Near-term Intertie Access Policy "is working well."

But on yet another front, "The steam has gone out of long-term sales," says Schultz. Plenty of electricity heads down the transmission lines every day—it was 94 percent full last year, resulting in the sale of some 35 million megawatt hours out-of-region. But almost all the sales are made in day-to-day and week-to-week transactions. Out-of-region utilities apparently see no reason to sign long-term contracts during the Northwest's enduring surplus—not when they can buy the power reliably on the spot market, at less cost, and with less risk of being locked into an expense that may not always be justified. "They don't see any reason to feel anxious about the price or the supply," says Bob Lamb, assistant director of Bonneville's division of power resources planning.

Spokesmen at Portland General Electric and Pacific Power & Light put a brave face on the situation — they claim the always-slow discussions are proceeding satisfactorily. "These negotiations are like breeding elephants," says Dick Dyer of Portland General Electric — referring to the long gestation period, and perhaps also to the massive, unpredictable partners. But Lamb sums it up by saying, "The parties express interest. They hold discussions. They do a bunch of analysis. But it just isn't happening."

The Northwest Power Planning Council takes a particular interest in the regionwide effects of any long-term transactions, and of a long-term access policy Bonneville is scheduled to adopt in mid-1986. According to Council Chairman Chuck Collins, "If the region sells off inexpensive resources, it could find itself building expensive ones to serve utilities that run out of power." In November, the Council issued a statement expressing its belief that "intertie access is of great importance to accomplishing the goals established by the Northwest Power Act, including provision of cost-effective resources and protection against environmental damage." A policy that results in a lot of costly new building to support out-of-region sales "would not appear to be consistent with the Council's plan," Collins says.

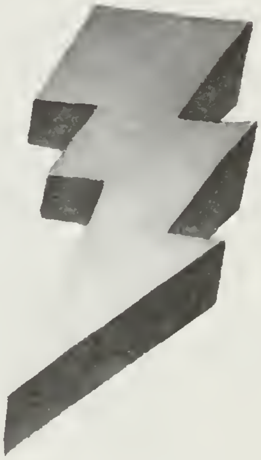
At the time this article went to press, the Council was considering public comment on a staff proposal to give priority long-term access on the intertie to sales which benefit and protect the region. Seasonal exchanges of energy would receive some priority (Southwest loads peak in the summer, with air-conditioner use; Northwest loads peak with winter heating). If one utility's long-term sale deprives another utility of intertie access, the proposal also suggests that the one which gains compensate the one which loses.

The proposal favors transactions that include callback provisions. Bonneville's out-of-region capacity exchanges are already subject to a five-year callback, and the agency's energy agreements carry a 60-day option. Federal law requires these limits to protect the preferential right of Northwest public utilities to Bonneville power. Callback conditions only apply to private utility sales if Bonneville resources back up the deal. PGE's Dick Dyer argues that callback constraints cause difficulty in making deals and getting the best price.

Competition in the American market is sacred — and obligatory. But some power brokers contend that the Californians see before them such a wealth of Northwest sources, and so many eagerly competing prices, that, in the words of one negotiator, "They must think they're in heaven." "Everyone believes they can make a better deal on their own," says Mike McCoy, chief of Bonneville's generation planning branch. McCoy believes that all sellers would remove constraints and maximize their gains with power pooling agreements, "using real cooperation and coordination."

"These negotiations are like breeding elephants."

–Dick Dyer



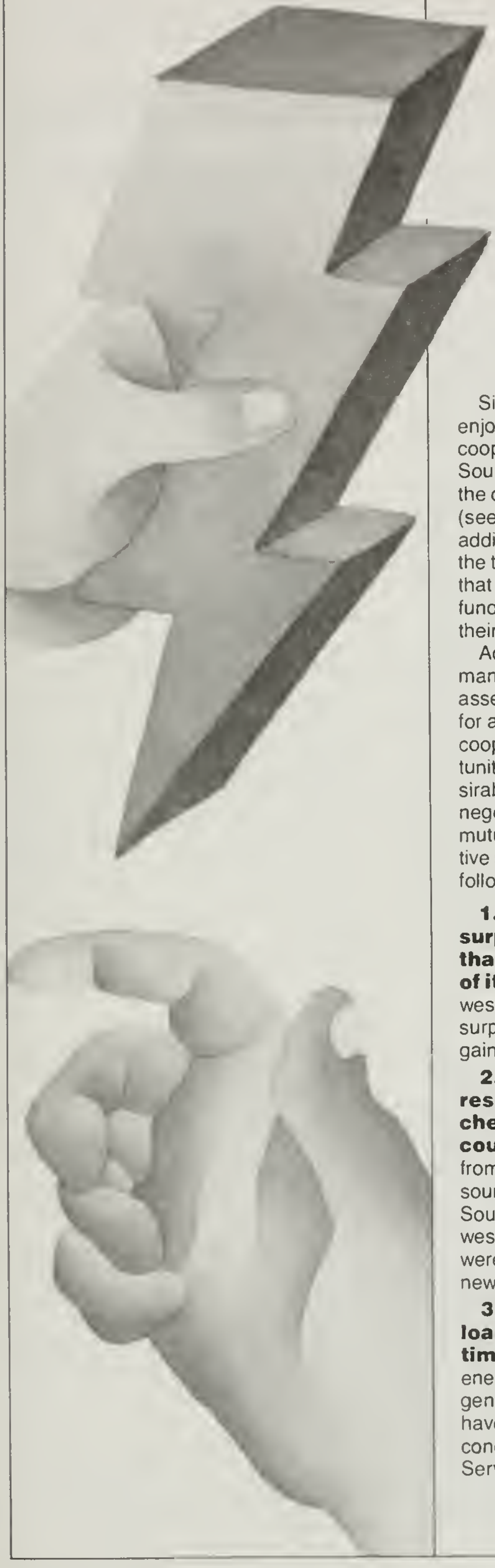
This kind of organized sale exists in other regions, but it can be a delicate thing — for, as Merrill Schultz says, "Sure there are tremendous advantages to it. There's only one disadvantage. You could spend the rest of your life in the slammer for accommodation in restraint of trade." It's called the Sherman Antitrust Act.

This convincing obstacle to collaboration among sellers has "pretty much truncated the actions available to us," says Maureen Flynn, Bonneville's manager for access policy. Sellers can offer a product and a price to their broker — Bonneville — but they can only go so far in talking things over with each other. This kind of strait jacket "makes it difficult for us to put together any kind of package that individual utilities can't provide on their own," says Bob Lamb.

The latest extra-regional marketing devices contemplated for Bonneville's arsenal include a share-the-savings arrangement and a firm power displacement rate. Both packages have been proposed for the 1985 rate case. Share-the-savings would give Bonneville half the money an out-of-region buyer saves by not using more expensive resources. The firm displacement concept would permit Northwest utilities to serve their in-region customers with Bonneville power, while selling their own, more expensive thermal energy out-of-region.

Both measures will increase the Southwest's cost to buy Northwest power. Firm displacement rates, at 3.1 cents, will also raise the costs for in-region utilities that want to use a reliable federal surplus to help them sell their own.

Rod Boucher notes this upward trend in prices with approval (though he questions how many utilities will participate in the high firm displacement structure). Boucher says, "It's only good management to put the price closer to the value. The region is finally starting to get what the electricity is worth." ■



Elsa Warnick Illustration

TRADING POWER

INTERREGIONAL COOPERATION

Since 1968, the Northwest has enjoyed the benefits of interregional cooperation with Canada and the Southwest, in energy planning and in the operation of connected systems (see examples below). But a variety of additional opportunities may exist for the three regions to cooperate in ways that would save all of them considerable funds and reduce uncertainty about their energy future.

According to Tom Foley, Council manager for conservation and resource assessment, "The prime requirements for achieving benefits from interregional cooperation are to identify the opportunities, including availability and desirability of added transmission, and to negotiate agreements that produce mutual benefits." Among the cooperative structures he points out are the following:

1. One region can buy another's surplus resources more cheaply than developing new resources of its own. For example, the Northwest has been selling much of its surplus electricity to California, to the gain of both regions.

2. One region can build new resources and sell them more cheaply than another region could build on its own. Hydropower from British Columbia and thermal resources from Alberta might serve the Southwest and a post-surplus Northwest more cheaply than if these regions were to construct their own new thermal plants.

3. Two regions have system loads that peak at different times. Exchanges of capacity and/or energy allow both regions to build fewer generating resources than they would have otherwise required. A recent study conducted jointly by Arizona Public Service Company and the Intercompany Pool estimates such exchanges between the Northwest and Southwest could achieve cumulative fuel savings and capital deferrals of between $130 and $860 million from 1995 through 2004.

Among other possibilities cited in a recent Council issue paper:

- The Northwest could pay the Southwest to maintain, rather than retire, its older, oil-fired generation. This arrangement could save the Northwest the expense of building new combustion turbines costing about $500 million.
- The Bonneville Power Administration and British Columbia Hydro could combine their surplus resources to fashion a long-term firm sale to California. B.C. Hydro often cannot sell directly to the Southwest, and Bonneville is somewhat limited in its ability to make long-term firm sales.
- Coordination of B.C. Hydro and Bonneville could lead to more efficient operation of the two systems. The additional power and/or dollars could be shared by both systems. The arrangement could also improve fish flows.

A recent Bonneville study estimated that, if California and the Northwest can work out agreements to expand transmission capacity between them, net benefits to this region could range from $1.8 billion to more than $3 billion over the next 20 years.

The potential value of cooperative actions has led the Council staff to recommend a West Coast energy planning effort. In the proposal, technical personnel would first identify opportunities and constraints for mutually beneficial cooperative agreements. Later, as conditions warrant, negotiations could begin between and among interconnected regions. —SE

Northwest Industries:

Two years ago, when the Northwest Power Planning Council drafted its first energy plan, it did so against the backdrop of a citizens' movement seeking rate relief. Although that movement now seems relatively mute, today many of the region's industrial customers have raised their voices about rates and are turning to the Council and the Bonneville Power Administration for relief.

The Direct Service Industries (DSIs), industries which buy power directly from Bonneville, have been most vocal. Yet other basic industries for whom electrical energy is vital are also feeling the pinch of higher rates. The Boeing Company, for example, an aerospace firm headquartered in Seattle, Washington, has seen its annual electricity bill go from $1 million in 1972 to $9 million in 1985.

Boeing is one of about 30 non-DSI industries that make up the Industrial Customers of Northwest Utilities (ICNU). These industries, which include pulp and paper, chemical, steel, wood products, electronics, and aerospace, rely heavily on electricity. But, unlike the DSIs, they buy power directly from their local utility.

"One important fact to remember about the non-DSIs," says Ken Canon, executive director of ICNU, "is that they employ 98 percent of the industrial work force of the region. The Boeing Company, for example, is Washington's largest single employer and its airplanes are the state's number one export product and income producer. These industries play a key role in the region's economy, and electrical energy is an integral part of their operations."

by Mickey Riley

Key Players

COMPANIES LIKE BOEING RELY ON ELECTRICITY

Four members of the Council toured the Boeing plant in Everett and Boeing Computer Services in Bellevue, Washington recently. "Perhaps the most interesting part of the tour for me," said Montana Council member Gerald Mueller, "was hearing about the different grades of power needed by the company and the way in which Boeing has adapted to meet those needs."

The Everett plant requires what might be called "raw" electricity to run boilers for steam production, while the Bellevue Computer Center requires a very "pure" and very reliable grade of electricity.

"Steam makes up approximately 55 percent of our energy needs at the Everett facility," says Wes Engstrom, Energy Office manager for Boeing, "and it is used primarily for heating and cooling the huge facilities where the airplanes are painted."

A typical 747 receives 600 pounds of paint — the equivalent of three people and their luggage. "For each temperature cycle, the complete surface of the (232-foot-long) plane must be heated, which means the whole facility must be heated to the required temperature," says Engstrom.

In order to adjust to varying prices of energy sources over the last ten years, Boeing has gone to a four-fuel boiler system. Three of its boilers run on bunker C oil and natural gas, as well as on contaminated jet fuel. "And in 1977 we added another boiler to run on electricity," says Engstrom. The multiple boiler system allows flexibility to adjust to price variations in energy sources.

"This kind of flexibility," says Oregon Council member Roy Hemmingway, "presents a real opportunity for the region. It's an opportunity to make use of electricity when hydro is abundant and to switch to other fuels when it is scarce."

Undoubtedly the most valued use for electricity is for operating the huge computer systems at Boeing's Computer Center. The 60-acre complex, which houses a 200,000-square-foot center, provides services for customers within the Boeing system and engineering and scientific time-sharing services to others.

Reliability is such a crucial element to this super-computer system that the whole Boeing Company could literally be out of business if it lost power for one week, according to Engstrom. "We're talking not just about undelivered airplanes and other products but the potential loss of information, our own as well as that of our customers," he emphasizes.

Boeing has gone to great lengths to protect the ability to collect, analyze and deliver information. The computer facility houses two large rooms: one is completely filled with over 1,800 battery cells, the other houses ten diesel generators. Together they make up the UPS system — uninterrupted power supply.

The batteries in the UPS system are floating "on line" so that if there is a problem with the power supply from Puget Power, the batteries take over without interruption. In addition to this backup, several layers of disaster recovery plans make it possible to reconstruct at least a portion of one of the data centers within 24 hours. The whole UPS system represents millions of dollars invested to ensure power reliability.

Boeing's extensive efforts to provide flexibility in its fuel source and to protect its supply of power indicate how important energy is to its production. For some ICNU industries, electrical energy costs, as a percent of production, can run quite high — as much as 25 percent.

"Obviously this is one of the reasons so many of these industries, including some of the very old industries, have spent the money to make their plants more efficient," says Ken Canon. "Longview Fibre, for example, is over 50 years old, yet its plant is as energy efficient a plant as any around."

All of these factors lead the industrial community to play a very active role in the Council's planning process. "We're looking at all the Council issues that have a direct impact on us," says Canon, "from conservation and cogeneration to the forecast and resource acquisition. Resource acquisition is extremely important to us because it determines what goes into the rate base and what we will ultimately be paying for."

As the Council maps out its resource portfolio in the draft power plan, activity among the region's industrial customers, both DSIs and non-DSIs, will undoubtedly intensify. "We can't just look at the DSIs and not worry about the other industries," says Mueller. "It's important that we pay attention to the fate of all of the region's industries."■

Boeing 747s are assembled in the company's Everett facility. In foreground at left are Mickey Riley, Wes Engstrom and Ken Canon. At right, a 747 being prepared for Cathay Pacific Airlines.

BETTERING THE ODDS

The water budget on the Columbia

by Carlotta Collette

Carlotta Collette photos

This April came on warm.

By the middle of the month, more than ten million tiny salmon and steelhead trout were already heading downstream from the many reaches of the Columbia River system. They were cued by the rise in water temperatures and launched from hatcheries along the Columbia and Snake Rivers and tributaries.

Their goal was the North Pacific where less competition for food in the coastal waters will enable the young fish to grow more than 30 inches, adding at least as many pounds. To get there, they must ride the Columbia (some of them travel more than 500 miles), and the dam-constrained river can be particularly uncooperative in the spring. Odds are seriously stacked against the juvenile migrants.

If they have any genetic memory they might recall a more rambunctious Columbia River. It was a river they could race from source to mouth in rarely more than two weeks. Speed is essential, because these fish have an agenda. They are physiologically adjusting from freshwater to saltwater environments, and they must complete the biological change at approximately the same time they hit the first salt water in the estuary. This process (called smolting) takes about 30 days. Within that time they must make their way past the concrete dams massed across their path at varying intervals. If they fail, it's likely they will die as disease and predators, along with the dams themselves, take their toll.

The dams are not only formidable walls with sharp blades that can spin in their depths; they have also, historically, held back the April through June thaw, stalling the fish in cold reservoirs. The water was released from these manmade lakes if power was needed, if farms required withdrawals for irrigation, or if the reservoirs needed lowering for flood

Speed is essential, because these fish have an agenda.

Above, steelhead smolt. Left, predators await stunned smolts at downstream side of dam.

control. Concerns for the migrating smolts ranked low on the list of river management priorities.

In 1982, when the Northwest Power Planning Council adopted the Columbia River Basin Fish and Wildlife Program, the spring fish runs finally acquired equal consideration. The program is aimed at creating better odds for fish survival throughout the 250,000 square mile basin of the Columbia. As the numbers of salmon and steelhead entering the river increase, their safe migration will become even more critical. Consequently, one of the most important (and most expensive) measures in the fish and wildlife program is the water budget, an operation to speed smolts through the reservoirs and on their way to the open sea.

The water budget calls for coordinated flows to move a given amount of water, laden with young fish, through each of the reservoirs below Chief Joseph Dam on the Columbia and Hell's Canyon and Dworshak Dams on the Snake and Clearwater Rivers. (This spring, like last year's, it is likely that no water budget will be called for on the Snake River. Normal hydropower operations, coupled with natural runoff from the mountain snowpack in Idaho, is expected to produce flows high enough to flush the smolts through the Lower Snake River system and accomplish what the water budget is designed to do.)

To shape the flow of water beginning April 15, when the main body of the fish migration, mostly from hatcheries, begins, two water budget managers, one representing the basin's Indian tribes and the other representing state and federal fish and wildlife agencies, confer with the Bonneville Power Administration, the Bureau of Reclamation, the Corps of Engineers and operators of the non-federal dams. The increased flows end June 15, when, it is assumed, 80 percent or more of the fish, including late migrating natural stocks, have made it through the dams.

The water budget on the Columbia, the first of its kind in the country, is a product of the cooperation called for by the U.S. Congress in the Northwest Power Act of 1980. In passing the Act, Congress directed the Council to treat the Columbia River as a "system." Increasing flows to move fish through this "system" had been attempted in the past, but there were no binding arrangements. Efforts tended to fragment along traditional adversarial lines, with fisheries agencies, Indian tribes, utilities and dam operators all eventually going their separate ways.

By encouraging collaborative problem solving, the Act set in motion a long overdue process of repairing not just the ecosystem in the basin, but also the institutional interactions.

In 1983, the water budget was tried in an experimental fashion, but 1984 was the first full year of its implementation. In that year, Water Budget Center staff calculated that more than 80 million smolting fish entered the Columbia River. Because of the water budget, their chances of getting to the ocean in less than 30 days were significantly better than in past years.

Like anything new, there were problems to work out, but late this March an agreement was reached between the water budget managers and the dam operators. The agreement defines a new operation that reduces weekly fluctuation of flows and calls instead for predetermined water budget levels based on the runoff forecast. The new flows begin at 120,000 cubic feet per second and escalate gradually to 140,000 cubic feet per second as the fish run picks up. Water budget flows last 45 days. This new regime provides close to optimum flows for the fish and allows project operators and Bonneville to plan power operations in advance of the water budget period, something they were unable to do last year.

Of the approximately 80 million salmon and steelhead smolts that rode the Columbia River system last spring, it's unlikely more than a quarter survived their long downstream migration. Experts believe that the water budget and improvements in fish passage facilities at each of the dams can at least double that number. Increasing the survival rates among fish traversing the Columbia is the number one priority of the Council's Columbia River Basin Fish and Wildlife Program. The program is a coordinated effort to help the river's salmon and steelhead beat the odds. ■

Restoring the Resource

by Carlotta Collette

ASSESSING FISH LOSSES — SETTING GOALS

IN THE OLD DAYS,

they say, the salmon runs in the Columbia were so thick you could walk across the river on the fat backs of the shiny fish. No one talks like that about today's runs. At present, there are no simple figures on just how many fish there really were in the river, nor how many have been lost. All we know is that both numbers are big.

Oregon Historical Society photo (Negative #25986)

By the time Congress passed the Northwest Power Act, in part to redress the grievances inflicted on the fish by the hydroelectric system in the Columbia Basin, the declining runs of Columbia River salmon and steelhead had reached the crisis stage. There were fears in the fisheries community that the once famed "shimmering hordes" were already beyond rescue.

To disprove that theory, the Northwest Power Planning Council pulled together historical adversaries to develop strategies for replenishing the resource. Congress set a tight time line for developing the program, and the Council met that schedule. In doing so, short-term goals that easily fell within the ratepayers' responsibility were agreed on, and the outer parameters of the program were temporarily set aside.

Now, the Council, working closely with other interested parties, has the task of reasoning through historical

Oregon Historical Society photo (Negative #58928)

There were fears in the fisheries community that the once famed "shimmering hordes" were already beyond rescue.

data, research studies and oral recollections, to come up with the best estimate of the salmon and steelhead losses attributable to the Columbia River hydro-system.

It's already been a long and very complicated process and one that's only just beginning to take shape, but by next spring, the Columbia River Basin Fish and Wildlife Program will have goals that will, in the words of Council Member Roy Hemmingway, "provide the framework and overall philosophy of the fish and wildlife program. When we have goals in place," Hemmingway added, "we will have a public and clear set of principles by which we can distinguish between acceptable and not acceptable program measures."

Council Chairman Chuck Collins concurred, emphasizing the goals process as a means of defining the limits of ratepayer responsibility for restoring the runs. "Goals will help us determine the size of the playing field," he reasoned.

So, the questions tabled two years ago are now being asked: What is the extent of salmon and steelhead losses attributable to hydroelectric development and operations? What are the appropriate goals for the program? And, what is the best way to achieve these goals?

The questions are as complex as they are compelling. The Columbia River Basin is a biological, geographical, social and cultural system, and many interrelationships have influenced the decline of the salmon. Culling out only one source of damage, in this case hydropower, and according specific reparations for only *that* damage, will take a careful search of historical data plus a good deal of informed judgment.

To communicate the Council's findings and encourage a basinwide dialogue on each of the major issues to be explored in the goals process, a series of issue papers will be prepared by Council staff. All of the papers will fit into a framework of four principal elements:

1. a statement of losses, describing the salmon and steelhead production and production capability which has been diminished or destroyed by hydropower development and operations in the basin;

2. a statement of goals and systemwide objectives indicating the scope of fish production to be funded under the Council's program and the major policies for determining the types and location of production to be emphasized;

3. production objectives, the series of short-term, geographically-specific and biologically-feasible production targets planned to lead together, over time, to achievement of long-term basinwide goals; and,

4. methods for measuring and accounting for progress towards goals and objectives.

As they prepare the papers, Council staff will compile information from fisheries managers (including basin tribal groups) and other interested and expert groups.

For information on fish "losses," descriptions of historic runs of salmon and steelhead will be compared with indications of the habitat used by those species, how each species was used (including commercial, cultural, subsistence, ceremonial and religious uses) and which elements (hydropower, lumbering, agricultural development, etc.) contributed to the loss of those fish. In some cases there has already been compensation for some of those losses, and this too will be integrated into the review of data. The primary product will be a draft statement of losses information that will be circulated for public review and considered for Council adoption.

Two of the issue papers are directly related to this loss process. The paper called "Contributions" will look at how hydropower and non-hydropower factors have contributed to salmon and steelhead losses, and the "Basis" paper will consider whether losses or some other factor should be used as the basis for setting program goals. Should hydropower-related losses, current production potential (which may vary from what was actually lost), harvest agreements or other factors provide the rationale for goals?

The Columbia River Basin is a biological, geographical, social and cultural system, and many inter-relationships have influenced the decline of the salmon.

Other papers will raise the arguments for measuring success in returning adults versus smolts; substitutions of resident fish for anadromous fish that are locked out of their former habitats by impassable dams; and whether there should be, or even can be, a realistic emphasis on wild stocks versus hatchery-reared fish.

As a major element of the Council's Hydro Assessment Study (see *Northwest Energy News;* Volume 3, No. 6), data relating to the production potential of the basin will be compiled and analyzed. This will feed directly into the Council's goals process by helping planners set priorities among species and habitats and by describing realistic production targets for both the short and long term.

Once losses and productivity information is available, the Council staff will begin to develop proposals for the goals themselves. Sometime in late summer, the Council will conduct a planning workshop with key resource managers throughout the Columbia Basin. The workshop will emphasize the Council's adaptive management policy as a tool for pulling together proposals for production objectives in a sample area. It is hoped that this experience will open avenues for developing basinwide production objectives.

Throughout the entire goals process, several new advisory committees will complement staff and contractor efforts. In addition, consultations with selected groups and regular discussions at Council meetings will inform and involve the citizens of the Northwest in this comprehensive task.

The Northwest may never again see a time when "you could walk across the river on the backs of the fish." But the goals process is a major part of a unique program that — with continued regional cooperation — could mean there will never be a day when Northwesterners tell stories that begin ... "I remember when you could see fish in the Columbia River." ■

Oregon Historical Society photo (Negative #74516) Walter Wilcox photographer

NORTHWEST Shorts

New Energy Secretary John Herrington outlined his priorities, saying, "coal stands atop the field in production of electricity. Nuclear power ranks second, and there is a vast, giant, partially tapped resource called conservation and energy efficiency. These are the advantages we must exploit for the future." (Source: *Western Energy Update*)

Freddie Mac endorses Super Good Cents Homes. The Western regional office of the Federal Home Loan Mortgage Association (Freddie Mac) says it will "consider for purchase, investment quality loans on Super Good Cents homes where the borrowers' debt-to-income ratios exceed our general guidelines." (Source: *Super Good Cents Bulletin,* Bonneville Power Administration)

Conservation is losing momentum according to World Watch Institute. The Washington, D.C., organization predicts energy consumption will triple by the year 2025. Meanwhile, energy use is up, according to the federal Department of Energy, which reported a 6.6 percent increase in the first three quarters of 1984 over the same period in 1983. (Source: *ENERGYgram,* Oregon State University)

Salmon are going to school in Newport, Oregon, and codfish are their teachers. In a research project at Oregon State University's marine sciences laboratory, codfish are teaching salmon smolts, mostly hatchery-reared cohos, how to survive — the hard way. The codfish attack the young coho, picking them off one at a time, until the survivors figure out evasive tactics. The good news is that "feedlot" coho appear to be quick studies. (Source: *National Fisherman)*

More emphasis should be put on sources of indoor pollution, according to a report issued by an advisory committee of the Oregon Department of Energy. "Tight construction that reduces a home's air leakage has been blamed for causing air pollution in homes," reported John Perry, building codes analyst for the Department. "The committee believes the best way to deal with the problem is to remove the sources of pollution in the homes." (Source: *The Oregonian*)

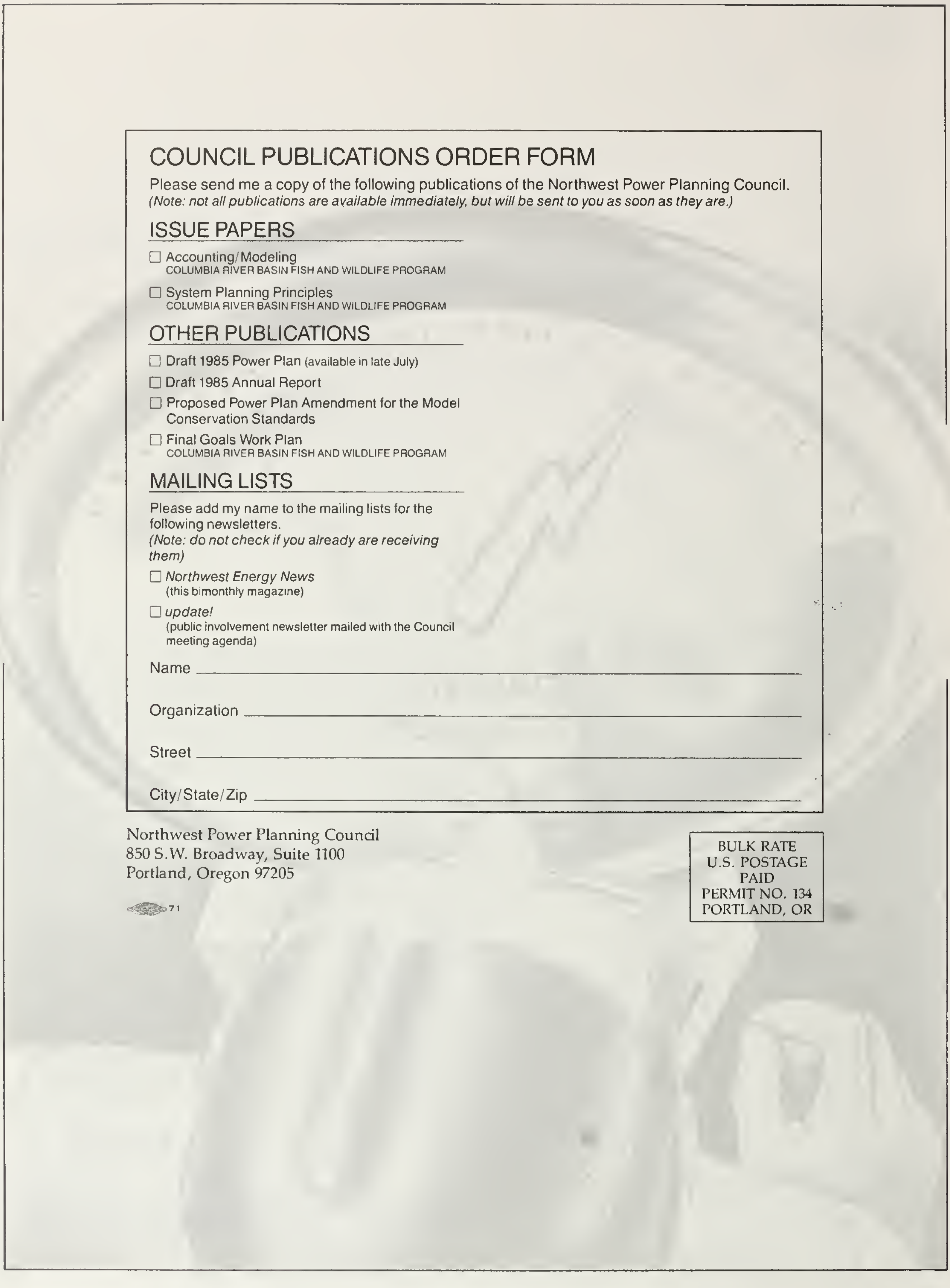
A Northwest school system is the only one in the nation to receive three major energy education awards. The Portland Public Schools Energy Studies Center received the Governor's Award for "Outstanding Achievement in Energy Conservation," the U.S. Department of Energy's "National Award for Energy Innovation," and the National Science Teachers Association's "Exemplary Award for Excellence in Education." The Energy Studies Center is a kindergarten through 12th grade project which integrates energy education into mainstream curriculum.

How do you keep them down on the farm once they've seen the wide world beyond? Oregon fisheries experts are trying to raise rainbow trout that will stay in coastal rivers rather than join their steelhead cousins' migrations. They tried in the 1930s with Utah-bred hatchery trout. They even tried Mexican trout. Both attempts failed. Now they're trying again in an effort to have game fish that can be caught year-round, not just when runs are active. (Source: *The Oregonian*)

An Idaho home built to the standards wins a national award. The Energy Wise home of Coeur d'Alene builder Art Elliott was named grand prize winner in *Shelter Magazine's* Total Home Contest. The home, occupied by the builder's family, is one of four he has built as part of the Residential Standards Demonstration Program, a builder training program for homes built to the Northwest Power Planning Council's model conservation standards. The magazine selected the home on the basis of its livability and energy efficiency from among 117 entries throughout the U.S. and Canada. (Source: *Currents,* Idaho Department of Water Resources)

People often don't weatherize homes for lack of a name. Researchers at the University of California in Santa Cruz turned up the problem when they conducted a study to find out why people don't take advantage of low-cost, high savings weatherstripping, insulation and caulking, yet spend thousands of dollars on solar rooms, wood stoves, and other measures that have longer payback periods. They found that people don't know what to call the simpler process. It isn't repair or maintenance; it isn't beautification; it's not visible or impressive. It's just "stuffing up the cracks." As such, its lack of glamour turned out to be an impediment despite the potential paybacks.

Historical photo



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Please send me a copy of the following publications of the Northwest Power Planning Council.
(Note: not all publications are available immediately, but will be sent to you as soon as they are.)

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☐ Accounting/Modeling
COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM

☐ System Planning Principles
COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM

OTHER PUBLICATIONS

☐ Draft 1985 Power Plan (available in late July)

☐ Draft 1985 Annual Report

☐ Proposed Power Plan Amendment for the Model Conservation Standards

☐ Final Goals Work Plan
COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM

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Northwest Power Planning Council
Statehouse Mail
Towers Building
450 West State
Boise, Idaho 83720

Telephone: 208-334-2956

Council Members:
W. Larry Mills
Robert Saxvik, vice chairman

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620

Telephone: 406-444-3952

Council Members:
Morris Brusett
Gerald Mueller

Oregon

Northwest Power Planning Council
505C State Office Building
1400 S.W. Fifth Avenue
Portland, Oregon 97201

Telephone: 503-229-5171

Council Members:
Donald Godard
Roy Hemmingway

Washington

Northwest Power Planning Council
Olympic Tower Bldg., Suite 700
217 Pine Street
Seattle, Washington 98101

Telephone: 206-464-6519

Council Members:
Charles Collins, chairman
Kai Lee

Central

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, Oregon 97205

Telephone: 503-222-5161
Toll Free: 1-800-222-3355
(1-800-452-2324 in Oregon)

Executive Director: Edward Sheets

NORTHWEST
ENERGY NEWS

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The Northwest Power Planning Council is required to develop a program to restore the Columbia fisheries and a regional electric energy plan, to be carried out by the Bonneville Power Administration, emphasizing cost-effective conservation and renewable resources

Executive Editor: Dulcy Mahar
Graphic Design: Linda Sawaya
News Editor: Steve Engel
Features Editor: Carlotta Collette
Special Departments Editor: Ruth Curtis

EDITOR'S NOTES

This special issue of *Energy News* features highlights of the Northwest Power Planning Council's Draft 1985 Power Plan. Several members of the Council's central and state office public involvement staffs contributed to this issue. They are—in alphabetical order—Carlotta Collette, Ruth Curtis, Steve Engel, Beth Heinrich and Mickey Riley.

The full text of the Draft 1985 Power Plan is available. See the order form on the back cover. Instructions for comment on the draft appear on page 27 of this issue.

Because we waited until the Council approved the draft plan for release, this issue is not in our usual sequence. It replaces the July/August issue.

Scattered throughout this issue are facts about the Northwest's power supply system culled from the draft plan. They were illustrated by Portland artist Michael Cacy, who also illustrated our cover.–*DM*

CALENDAR

September 4-5—"Wind Energy in Montana" in Livingston, Montana. Sponsored by the Montana Department of Natural Resources and Conservation and Windbooks, Inc. For information: Montana Wind Energy Association, P.O. Box 1376, Livingston, Montana 59047-1376. (406) 333-4484.

September 7-12—American Fisheries Society and International Association of Fish and Wildlife Agencies Conference in Sun Valley, Idaho. For information: Steve Barton, Idaho Department of Fish and Game, P.O. Box 25, Boise, Idaho 83707.

September 18-19—Northwest Power Planning Council meeting in Portland, Oregon.

September 21—"Solar '85—A Conference on Energy Challenges," the 1985 annual conference of the Solar Energy Association of Oregon, held at Timberline Lodge on Mt. Hood, Oregon. For information: Phil Barrett, Solar Energy Association of Oregon, 2637 S.W. Water Ave., Portland, Oregon 97201. (503) 224-7867.

September 23-24—"Third Alternative Energy Financing Conference" in New York, New York. Sponsored by Public Utilities Reports, Inc. For information: Laurie Pystrak, Public Utilities Reports, Inc., 1700 N. Moore St., Arlington, Virginia 22209. (800) 368-5001.

September 24-25—Conference on "The 1985 Draft Power Plan" in Spokane, Washington. Sponsored by the Northwest Public Power Association and the Public Power Council. For information: (206) 694-6553 or (503) 289-9411.

September 25-27 —"Waterpower/'85; An International Conference on Hydropower" in Las Vegas, Nevada. Sponsored by the U.S. Bureau of Reclamation. For information: American Society of Civil Engineers, 345 E. 47th St., New York, New York 10017.

October 9-10—Northwest Power Planning Council meeting in Missoula, Montana.

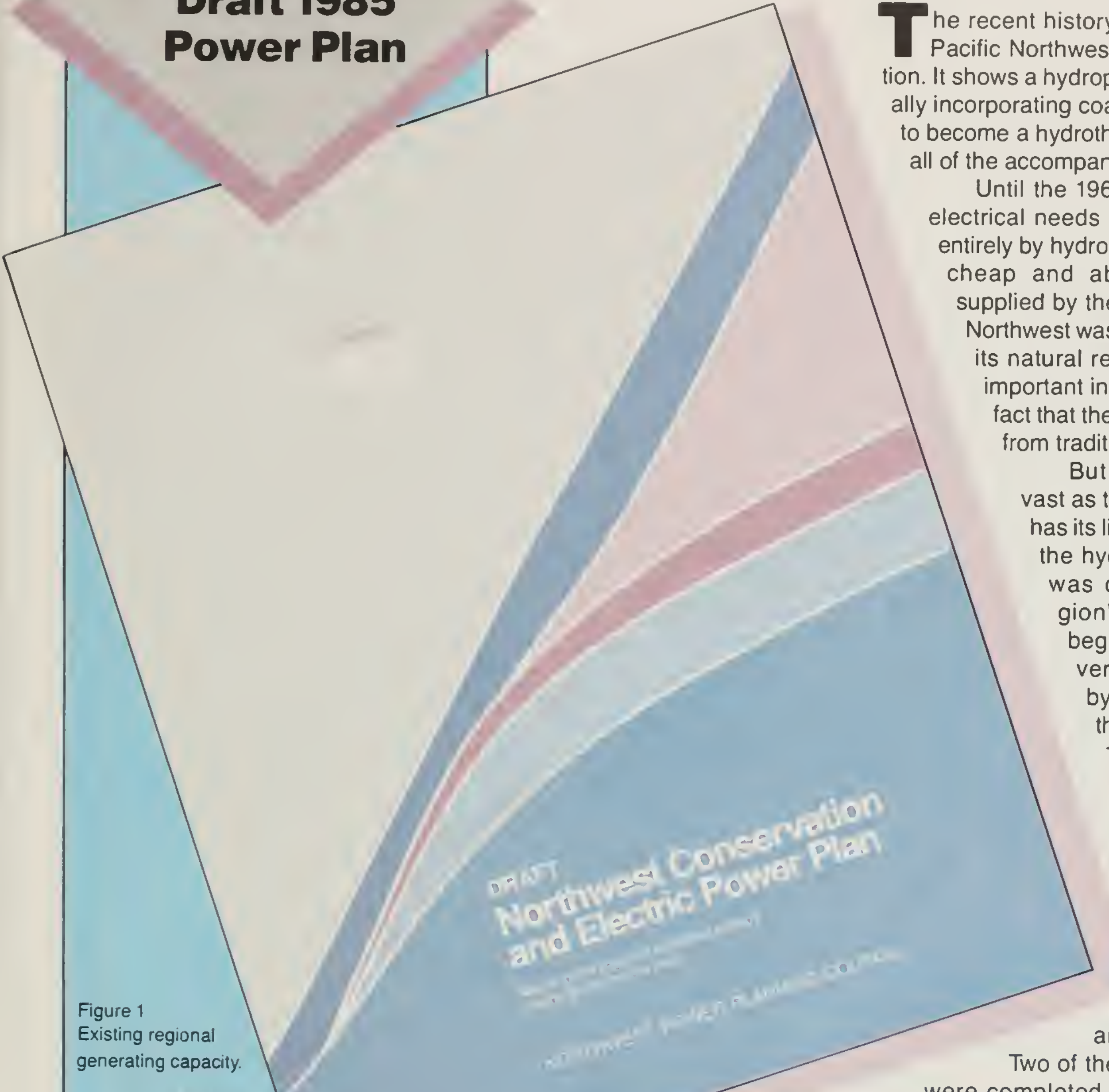
October 17-18—Conference on "Moisture Problems in Residential Construction: Separating Myth from Reality" at Seattle Airport Hilton. Sponsored by Washington Energy Extension, Oregon State Extension Energy Program and Puget Power. For information: Chuck Ebert, Washington Energy Extension Service, Seattle University, Seattle, Washington 98122. (206) 626-6225.

October 22-25 —"World Energy Engineering Congress" of the Association of Energy Engineers in Atlanta, Georgia. For information: Association of Energy Engineers, 4025 Pleasantdale Rd., Suite 340, Atlanta, Georgia 30340. (404) 447-5083.

October 30-31—Northwest Power Planning Council meeting in Boise, Idaho.

Compiled by Ruth Curtis

Introducing the Draft 1985 Power Plan



The recent history of electricity in the Pacific Northwest is a story of transition. It shows a hydropower system gradually incorporating coal and nuclear plants to become a hydrothermal system—with all of the accompanying growing pains.

Until the 1960s, the Northwest's electrical needs were served almost entirely by hydropower. Thanks to the cheap and abundant electricity supplied by the region's rivers, the Northwest was able to capitalize on its natural resources and attract important industries, despite the fact that the region is a long way from traditional markets.

But even a system as vast as the Columbia River's has its limits, and, as most of the hydroelectric potential was developed, the region's energy planners began to anticipate severe energy shortages by the 1980s. During the 1960s and 1970s, 17 coal and ten nuclear plants were planned to supplement the hydropower system. Of these, 11 coal plants were built, two are nearing completion and four are on hold. Two of the ten nuclear plants were completed, while construction has been suspended at two other plants. The remaining nuclear projects were terminated. Figure 1 illustrates the current hydrothermal balance.

Today, the region has a 2,300 megawatt surplus of electricity that could last from five to more than 20 years, depending upon how fast the region grows. Paying for these plants—some of which are not now needed—has made the surplus expensive to the region and its ratepayers. In fact, in historical terms, the surplus is not unusually large; what is unprecedented is the cost of this surplus. The total investment in terminated and suspended nuclear plants, alone, is $7 billion.

Much of the regional advantage of low-cost electricity has been lost. Because it is important for economic vitality that costs of electricity be kept as low as possible, the Draft 1985 Power Plan offers steps to reduce and control future electrical costs.

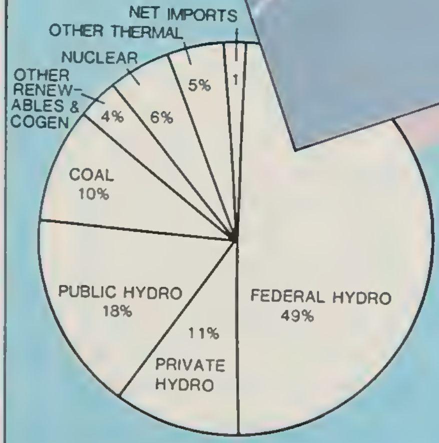


Figure 1
Existing regional generating capacity.

Highlights of the Draft 1985 Power Plan

During the preceding decades, electrical energy planning had focused largely on making sure that the region had ample power to support a growing economy. Now, the expensive surplus has taught the region a lesson. Overbuilding resources can be as detrimental to the region as underbuilding. A fundamental purpose of the power plan is to strike as close a balance between resources and needs as possible.

The Northwest Power Planning Council, an interstate compact agency authorized by the Northwest Power Act of 1980, was set up to develop a 20-year electrical power plan for the Northwest—as well as a program to protect and restore the fish and wildlife affected by hydroelectric development in the Columbia River Basin. The overall goal of the Council's plan is to achieve the lowest cost electrical energy future for the Pacific Northwest. At the same time, it must ensure there is sufficient and reliable electrical energy to support the highest likely economic growth in the next 20 years.

The Council's first power plan was released in 1983. The Northwest Power Act requires that the plan be reviewed at least every five years, but because of the changing energy picture and the Council's wish to incorporate the latest technology and information, the Council has chosen to develop a new plan this year. The draft plan has been published to solicit public comment. The final plan, which will take into account this comment, is scheduled for adoption in December 1985.

Highlights of the Draft 1985 Power Plan

An underlying theme throughout the draft plan is a call for regional cooperation. The Council is not talking about a vague philosophical attitude, but instead a series of specific cooperative actions which could save the Pacific Northwest $3.8 billion in the next 20 years. (See Figure 2.) The Council strongly believes regional cooperation is the best strategy for realizing a low-cost electrical energy future.

One of the keys to this cooperation will be the role assumed by the Bonneville Power Administration, the region's federal power marketing agency. Currently, Bonneville serves about half the region's electrical power needs—100 of the 115 public utilities and a small portion of one investor-owned utility's needs. The other half of the regional electricity load is served by investor-owned utilities and public utilities with their own generation.

This situation could change in the near future because of disparities in how the current surplus is distributed. The public utilities, with their access to the federal base system (principally power from the federal dams) appear to have a much larger share of the surplus. But the investor-owned utilities could need new resources within the decade if economic growth is rapid. By law Bonneville must supply power to any utility which requests it. Therefore, the investor-owned utilities could turn there when they have exhausted their own cost-effective resources.

If the investor-owned utilities do turn to Bonneville, the agency's obligations to supply power could double in the next 20 years. (See Figure 3.) Even with this doubled load, it would be cheaper to the region as a whole for Bonneville to supply power than for the investor-owned utilities to develop their own generating resources. The utilities are deterred from turning to Bonneville by the fact that there is currently no policy for a competitively-priced, predictable rate for power from new resources. Since one of the biggest uncertainties before the region today is what demands, if any, will be placed on Bonneville in the next 20 years, such a policy could significantly reduce uncertainty.

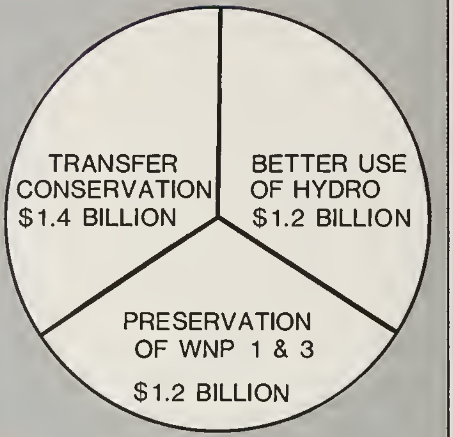


Figure 2
Benefits of regional cooperation.

A series of specific cooperative actions could save the Pacific Northwest $3.8 billion in the next 20 years.

Cooperation among power institutions is essential to keep future electrical power costs down. This cooperation is particularly important in three areas:

First, the need to develop regionally cost-effective conservation before turning to more expensive resources. The resource disparity among utilities could result in a situation in which conservation went undeveloped in the service areas of utilities with a surplus, while other utilities turned to higher cost or higher risk resources. That could cost the region as a whole $1.4 billion more for electricity than if all cost-effective conservation were developed first.[1] The draft plan calls for mechanisms to transfer conservation between utilities.

Priorities in the 1985 Draft Plan

The common thread running through the Draft 1985 Power Plan is cooperation. The ability of the region's power institutions to work together to develop regional resources, rather than each pursuing entirely independent paths, can greatly reduce the cost of electrical energy in the Pacific Northwest.

- The most important near-term priority is to save "lost opportunity" resources, those resources which, if not developed now, could be lost to the region.
- The Bonneville Power Administration also needs to assume a stronger regional role. It needs to develop a low-cost and predictable rate for power from new resources so that utilities will be able to turn to Bonneville rather than developing their own more expensive resources.
- Mechanisms must be found so that the region's utilities can develop resources, particularly conservation, on a regional basis. Bonneville should support sales of conservation between utilities.
- Bonneville must address the issue of allocating costs for potential options, such as WNP-1 and 3, and work toward eliminating barriers that block their construction so they can be completed if their power is needed.
- Strategies should be developed to make better use of the hydropower system, particularly the large amount of nonfirm power that is produced in average to good water years. Ways should be explored to back up this power so that it can serve firm loads.
- Regional organizations need to build the capability to deliver conservation in all sectors so that it is ready and reliable when needed.
- The region must find ways to reduce the uncertainty created by fluctuations in aluminum industry loads.
- Electrical power purchases and sales between regions will be studied so that their potential for mutual benefit can be clarified and realized.

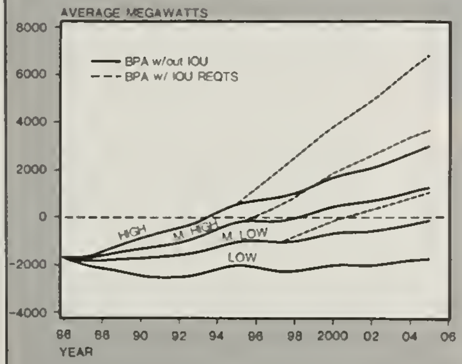


Figure 3
BPA resource requirements
with and without investor-owned utilities.

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[1] This cost and the following ones are determined by what the region would have to pay if it needed new power and had to turn to more expensive resources to supply it.

Planning for Flexibility

Second, cooperation is key to allocating the cost of acquiring and holding potential resource options that provide flexibility for the regional power system. The costs of preserving two partially completed Washington Public Power Supply System nuclear plants (WNP-1 and 3) can range between $24 million and $72 million a year. Currently, Bonneville pays the bulk of this cost. Bonneville does not appear to need the output of these plants unless the investor-owned utilities place substantial loads on the agency. The uncertainty of these loads has led to dissatisfaction about who pays for the preservation costs. A system to allocate costs equitably could enhance preservation of the two plants, which have a value of $1.2 billion to the region.

Third, the need to make better use of the hydropower system also requires cooperation. Specifically, the draft plan addresses better ways to use the hydropower that is available in all but the driest years. Because hydropower depends on the weather—rainfall and snowpack—the amount of power varies from year to year as well as within a year. Planning for the system is based on critical water, the lowest water available in over 100 years. However, the difference between critical water and average water produces enough electricity to serve four cities the size of Seattle. This additional power is called nonfirm because it is not always available. Strategies to "firm-up" this power so that it could serve firm loads could save the region $1.2 billion. Bonneville needs to develop a policy for allocating nonfirm energy to serve customers whose loads are growing.

Other uncertainties facing the region

The volatility of the direct service industries represents a major uncertainty for the region. These industries, primarily aluminum plants, use so much electricity (15 percent of the regional load) that they buy directly from Bonneville. Because of economic factors, the Northwest aluminum plants tend to operate as "swing" plants, operating when aluminum prices are high and shutting down when they are not. In the last five years, the power used by these plants has fluctuated by as much as 1,000 megawatts. The long-term future of these plants in the region is also uncertain.

Incomplete data on conservation programs create another uncertainty. While much progress has been made—principally through the adoption of the model conservation standards in six Washington areas and other code and building practice improvements spurred by the standards—much remains to be done. The Council's first power plan called for Bonneville to develop and test programs to build capability for conservation across all sectors—residential, agricultural, commercial, industrial and governmental. Building capability means developing and testing programs so that they are ready to use if the region needs them. With the exception of the residential sector, the region still has little conservation experience. Bonneville needs to develop such programs across all sectors.

The future of WNP-1 and WNP-3—plants which could provide 1,600 megawatts—is also a question mark. While the Council has found the plants cost effective, it has also identified a number of legal and financial barriers to their completion. The region cannot rely on future power from these plants until these barriers are overcome.

The potential for future out-of-region sales and purchases is largely unknown. The Council will conduct a West Coast energy study to gain information on import and export opportunities.

The following sections of this issue highlight key parts of the Draft 1985 Power Plan. These summaries are not in a chapter-by-chapter sequence because some issues are covered in several chapters of the draft plan. For a chapter-by-chapter synopsis, turn to page 28.

Michael Cacy illustration

In 1983, regional firm sales of electricity to the final customer totaled 14,569 average megawatts. That's enough electricity to heat 11 million homes in the Northwest. Built end to end, that many homes would circle the earth four times at the equator.

PLANNING FOR FLEXIBILITY

It is impossible to forecast with certainty how much electricity the Northwest will need at any point over the next 20 years. Demand can rise and fall from one year to the next, and it can change sharply or gradually. The task of the Northwest Power Planning Council is to develop a plan capable of responding to unpredictable changes so that resources closely match needs whether economic growth is high or low.

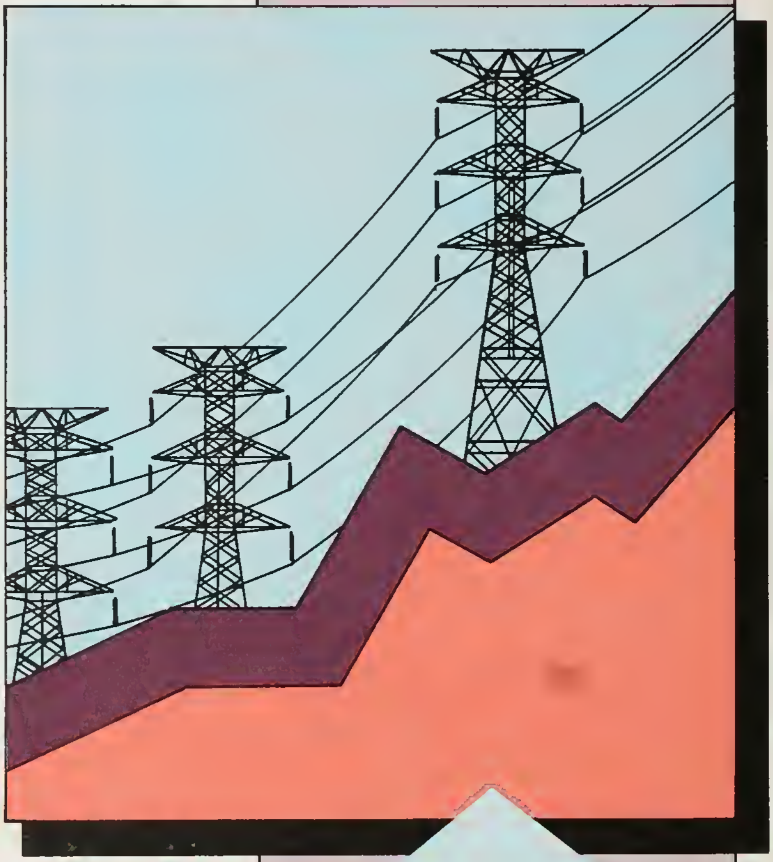
Choosing flexible resources

Major electricity generating plants with long construction periods require critical decisions many years before their power may be needed. By the time a plant is built, the demand for new electrical power may not have materialized. Long lead times, large plant sizes and high costs increase the risk inherent in energy planning. Therefore, the Draft 1985 Power Plan emphasizes smaller, lower-cost resources, with shorter lead times between the decision to acquire the resource and the time the resource actually begins producing power.

Flexibility is a key strategy in the draft plan, and conservation programs meet this objective particularly well. They can be started quickly and built up or cut back depending upon the region's needs for electricity. They can be acquired in small increments—individual buildings and local projects—which begin generating (saving) energy immediately. Moreover, conservation does not involve lengthy periods of siting, licensing, design and construction.

The plan identifies nearly 4,000 megawatts of conservation savings that can be achieved through a variety of measures and actions at a cost lower than almost any other source of electricity.

The region will need to build generating resources only as the Northwest economy takes an upward turn, thus increasing the demand for electricity. Even then, in keeping with the principle of flexibility, the first new generating resources would be small hydropower turbines at existing dams, irrigation and flood control projects. Coal plants would be built only if high growth continues and all other cheaper electrical power resources have been exhausted.



Michael Cacy illustration

Options—a flexible approach for generating resources

In its 1983 Power Plan, the Council developed an "options" approach to acquiring new resources. Optioning involves securing all the necessary permits for a project, completing initial design work, acquiring rights to a location—and then, if the electricity it would generate is not needed, keeping the project "on the shelf" until conditions warrant construction. The relatively small investment required in the preparation stages gives a resource sponsor time to evaluate power needs more accurately. This approach reduces the time and risk in building new generating resources. (See Figure 4.)

If energy demand takes an unexpected downturn, the plant can be delayed or terminated, and the region won't have committed to the entire cost of constructing an unneeded plant. If exceptionally rapid growth occurs, optioning cuts down the time needed to get a producing resource. A coal plant, for example, can be completed in five years rather than ten, once the process of siting, licensing and initial design is completed.

The options concept separates decisions related to expensive construction from those related to the time-consuming but relatively inexpensive preconstruc-

About 7 percent of the electricity generated at a power plant is "lost" in transmission before it gets to its ultimate point of use. The plan's resource portfolio includes 34 megawatts of efficiency improvements to decrease these losses in the Bonneville transmission and distribution system.

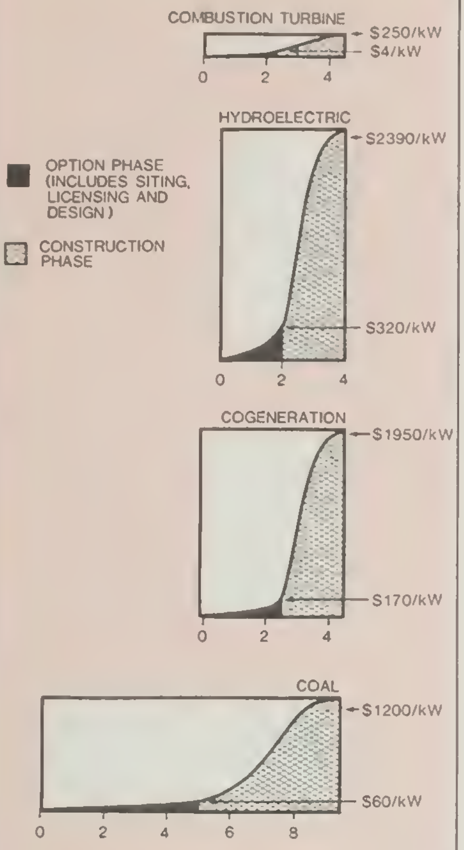


Figure 4
Cost and timing of optioning and constructing resources.

tion activities. An effective options planning strategy moves decisions to commit large sums of capital as close as possible to the time the power will be needed. This reduces the opportunity for surprises and lessens the probability of building an unneeded project.

The options approach also delays the environmental impacts of power plant construction and operation until the region actually needs the energy generated by those plants.

The Council has planned for enough options to meet the needs of a booming Northwest economy. If the economy grows more slowly, some options would be held until needed or even abandoned if not needed. The Draft 1985 Power Plan gives decision makers a means to assess conditions as they develop and to respond appropriately. Within the range of forecasts that bracket the plausible growth in demand for electricity, the actual demand for electricity might evolve along any of hundreds of directions. These are called load[2] paths. Decisions to option and to build resources have been tested against many load paths, to see which choices produce adequate supplies of electricity at the lowest cost.

Based on the outcome of this analysis, the Council determined that the region's electrical energy future will be most secure if options are planned for all but the top ten percent of the possible loads. However, the region should only plan to *build* resources to a level halfway between the highest and lowest tested load paths. The remaining options will keep the region ready to respond quickly in the event of higher growth in demand.

DEVELOPING THE FORECAST

Nearly every aspect of the power plan stems from the Council's forecasts of the Pacific Northwest's demands for electricity in the next 20 years. The crystal ball has given way to sophisticated computer models, yet despite today's electronic wizardry, demand forecasts remain highly uncertain.

Dealing with uncertainty

To address this uncertainty, the Council has developed a range of probable electricity demands for the next 20 years, rather than a single "best-guess" forecast. (See Figure 5.) This range includes four forecasts for future growth in demand—high, medium-high, medium-low and low. Actual demand is expected to fall between the high and low forecasts, and is most likely to fall between medium-high and medium-low. This range allows planners to prepare resources for a number of growth patterns. This ability to respond to change minimizes the region's exposure to risks from unanticipated shifts in the growth of demand for electricity.

The traditional role of demand forecasts could be described as deterministic; that is, a best-guess determined the amount of new electricity generation needed. The Council's forecasts have a more integral role in power planning in three ways. First, they help define the extent and nature of uncertainty. Second, the level of demand is not independent of resource choices, but will respond to the costs of those choices. Third, sophisticated computer demand models are used

The task of the Council is to develop a plan capable of responding to unpredictable changes.

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[2] Load refers to the amount of electrical power needed.

to assess the potential impacts of choosing conservation rather than building new generating resources.

History indicates that the demand for electricity generally parallels economic activity. Therefore, economic and demographic forecasts were incorporated into the plan in order to assess the region's future growth in the demand for electricity. Demand is also affected by the relative prices of competing fuels. The forecasts examine the results of various trends and assumptions concerning these fuel prices.

Some major economic and demographic trends have emerged which will affect demand for electricity. The aging of the population is expected to shape consumption patterns, increase productivity, and push up wage levels. It should also spur capital investment aimed at replacing labor with technology. From 1960 to 1980, employment in non-manufacturing industries increased at a rate nearly 70 percent higher than in manufacturing industries. Non-manufacturing employment in 1980 accounted for 81 percent of the regional total. Meanwhile, the region's large resource-based industries—lumber, aluminum and basic chemicals—have continued to stagnate and are not expected to be important sources of economic growth. While industrial growth is taking place in the Northwest, it tends to be in light manufacturing or service industries, rather than the traditional heavy users of electricity.

The four demand forecasts

The range of forecasts is similar to that in the 1983 Power Plan. The high forecast assures that the Council's plan will accommodate record regional economic growth should it occur. Under the high-growth forecast, demand could grow at a rate of 2.7 percent per year until the year 2005. Such growth would require an increase in electricity equivalent to the power from 15 nuclear plants the size of Washington Public Power Supply System Nuclear Project 2.

Forecast demand for electricity

Actual (Average Megawatts)		Forecasts (Average Megawatts)				Growth (Rate)
	1983	1985	1990	2000	2005	1983-2005
High	14,569	15,569	18,100	23,344	26,415	2.7%
Medium-high		15,407	16,799	20,343	22,021	1.9%
Medium-low		15,320	15,560	17,789	19,047	1.2%
Low		15,079	13,669	14,616	15,290	0.2%

Figure 5
Forecast demand for electricity.

Nearly every aspect of the power plan stems from the Council's forecasts of electricity demand.

In the high growth forecast, total regional employment would increase at a rate of 3.2 percent annually. That is 130 percent faster than employment-growth estimates for the nation's high-growth case and represents about 70 percent more jobs by the year 2005 than in the Council's low forecast. The high forecast also shows a 2.0 percent population growth rate. In the high-growth scenario the region's economy would fare better, relative to the nation, than it has ever done in the past. The large resource-based industries, such as forest products, aluminum, agriculture and basic chemicals, would remain vital to the region's economy, but are not expected to contribute new jobs. Instead, the electronics, trade and services industries are expected to expand rapidly.

In the medium-high scenario, regional employment would grow 2.4 percent per year and population 1.5 percent. This regional employment growth rate is twice as fast as the medium forecasted national employment growth. This scenario anticipates that rapid growth in high technology industries and the commercial sector will be coupled with moderate levels of activity in the resource-based industries.

In the medium-low growth forecast, regional employment is expected to grow at a rate of 1.5 percent annually, or 125 percent of the medium forecasted national rate. Population would increase by 0.8 percent. The medium-low estimate also shows traditional industries encountering low economic activity while other manufacturing industries and the commercial sector experience moderate growth levels.

Employment under the **low-growth forecast** is expected to increase by only 0.5 percent annually, 40 percent slower than projections in a low-growth national forecast. This implies a relative performance well below that which has characterized the Northwest in the long term. Total population is projected to increase 0.2 percent annually, while growth in non-manufacturing industries will be offset by declines in many of the larger traditional industries.

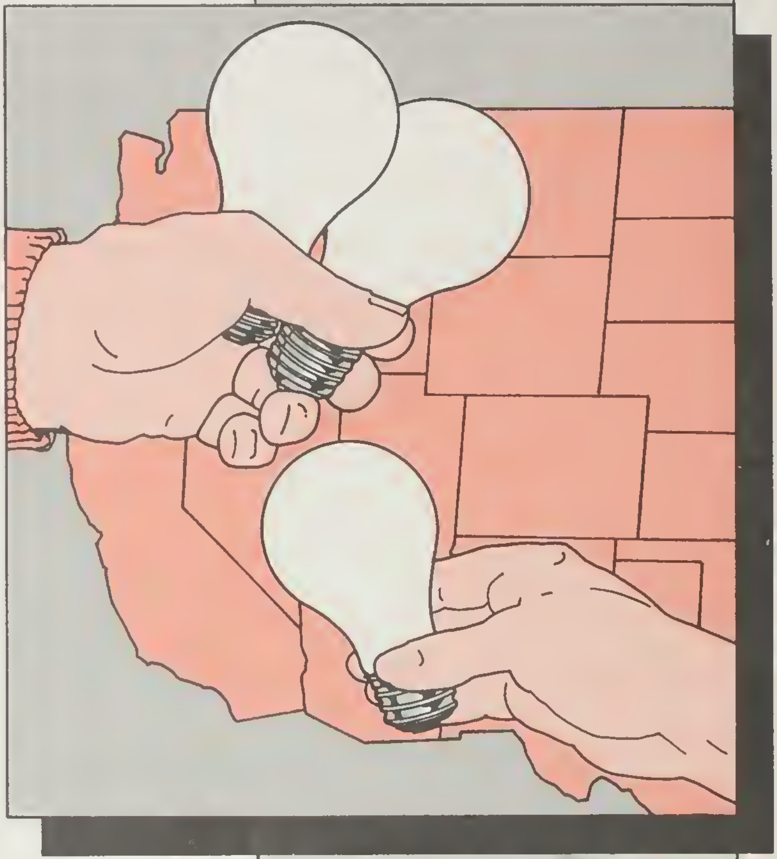
Electricity prices

The Council's forecasts of electrical rates indicate relatively stable prices for the Northwest over the next several years. The exact price outlook, however, varies substantially in the different forecasts because of the different amounts of new resources required in each forecast. Nearly all new resources cost more than existing resources, and adding new resources will undoubtedly raise electrical rates. Expanding the region's reliance on conservation will postpone this need to turn to expensive generating resources.

The Council's range of forecasts is the product of the most sophisticated forecasting tools. Those tools identify the economic uncertainty facing the power system and frame the problem to be managed. Ignoring uncertainty could lead to a Northwest resource glut and unnecessary rate increases or, on the other side, to a shortage of power and stifled economic growth.

EVALUATING RESOURCES

In considering resources for its plan, the Council first had to look at the region's existing electrical power system, then assess what new resources would be needed to meet a wide range of growth in energy demand. Resources had to be cost effective and forecast by the Council to be available and reliable. They had to be compatible with the existing hydropower system and they had to be environmentally sound and protective of fish and wildlife.



Conservation resources

Conservation measures improve the efficiency with which electricity is either produced or consumed. The Northwest Power Act considers conservation to be equivalent to resources that generate electricity, because each megawatt saved need not be produced at a new power plant. Buildings that cut down heat loss, through insulation and tightening, require less electricity for heating. Energy savings and consumer cost savings can also be realized from devices that improve the efficiency of commercial lighting, irrigation pumps, water heaters, dam turbines, metal smelting processes, and a host of other applications.

The first ten resources in the Council's plan are all conservation measures. (See Figure 6.) It is a huge resource—over 4,000 megawatts, equal to the output of more than eight coal plants. Yet it is highly flexible, because the energy can be acquired in small or large increments, and programs can start up or slow down quickly to match the region's requirements. On average, conservation savings over all sectors cost only 2.1 cents per kilowatt-hour. By comparison, energy from a new coal plant costs 5.5 cents per kilowatt-hour.

Figure 6

Resources in the Draft Plan

RESOURCES[1]	HIGH LOAD SCENARIO (avg. Mw)	RESOURCES[1]	HIGH LOAD SCENARIO (avg. Mw)
MCS Residential	723	Existing Commercial	848
MCS Commercial	416	Existing Industrial	549
Refrigerators & Freezers	430	Existing Agriculture	167
Water Heat	516	New Hydro	255
System Efficiency Imp.	121	Nonfirm Strategies	1,962
Mobile Homes	38	Cogeneration	330
Existing Residential	432	Coal (7 units)	3,164

[1] These estimates have adjusted the conservation savings for transmission losses. Since the Council's systems analysis is conducted at the point of generation, conservation estimates at the point of end use need to be increased by 7.5 percent to be comparable to generation.

Note. This list reflects changes made after the draft plan was published The text of Chapter 5, Volume II in the Draft 1985 Power Plan contains these numbers, but a corresponding table was not corrected.

North-
westerners
use nearly twice as
much electricity per person
as the nation in general. This is
due to the region's large supply of
low-cost hydropower. Forecasts show that,
while this use will remain well above
national levels, recent price
increases will cause
growth in use to slow
or even decline
in the future.

Michael Cacy illustration

At lower growth rates, conservation could supply almost all of the region's needs over the next 20 years.

Some conservation measures can only be installed during one brief period of opportunity, or the power savings will be lost forever. New buildings, new appliances, new irrigation systems and new industrial facilities must come equipped with energy efficient features. These features either cannot be added later or they cannot be added as cost effectively.

Because of this timing factor, along with its flexibility and low cost, its availability in large amounts and its benign environmental effect, conservation dominates the Council's portfolio of resources. At lower growth rates, conservation could supply almost all of the region's needs over the next 20 years. Almost half of the medium-high growth rate through the year 2005 could be met by conservation, and almost all medium-high growth through 1993.

Some conservation programs can be deferred until the region needs them. But the model conservation standards—energy efficiency levels for new residential and commercial buildings—are included in this plan, as they were in 1983. The energy savings from energy efficient buildings constructed now will continue long after the surplus ends.

Discretionary conservation programs include weatherizing existing residential and commercial buildings and installing technologies that increase the efficiency of existing industrial and commercial processes and irrigation systems. They are called discretionary because action on these resources can be delayed until they are needed. Improvements to the efficiency of the existing hydropower system and the regional transmission and distribution system are also discretionary at this point.

Additional savings are expected as more efficient refrigerators, freezers and water heaters reach the market, and from increased energy efficiency in mobile homes.

Generating resources

New hydropower amounting to 255 megawatts is included in the Draft 1985 Power Plan—a little more than a fourth of the total new hydropower in the 1983 plan. Recent efforts to license new hydropower sites have met with significant concern over environmental issues, fish and wildlife impacts, and scenic and recreational effects. Until it completes a regional hydropower assessment study in 1986, the Council is considering new hydropower development only at existing dams and existing non-power sites such as flood control and irrigation projects.

Only projects that would be available and reliable and would cost less than a coal plant were considered. The average cost (over its lifetime) of this resource, as a block, is 1.8 cents per kilowatt-hour. The bulk of new hydropower generation would be developed when conservation programs can no longer keep up with the pace of load increase.

Nonfirm energy is the amount of energy the region's hydropower system produces in excess of the hydropower available during the lowest water flow years (based on records kept since 1879). It is called nonfirm because, since it depends on the weather, it is not always available. The Council examined a number of strategies to make nonfirm energy more reliable, so it could be used to serve new and existing firm loads. Just under 2,000 megawatts of nonfirm energy are included in the resource portfolio. (See the special section on "Better use of the hydropower system" for more information about this new addition to the portfolio.)

Cogeneration is the simultaneous generation of electricity and useful heat energy. This heat can be used for industrial processes or for space heating. For example, a pulp mill burns waste materials in a boiler to produce steam, which can be used to heat pulp dryers. If high-pressure boilers are installed, steam turbine-generators can produce electricity between the boiler and the pulp dryers.

The resource portfolio includes 330 megawatts of cogenerated electricity, which can be developed at less than the 5.5 cent per kilowatt-hour cost of new conventional coal projects. This estimate is based on a survey of Northwest industrial plants. Because of the surplus, it appears that new cogenerated energy will not be needed until at least the latter part of the 1990s. The region and the Council have time to study the overall potential and cost of this resource.

Coal is the resource of lowest priority and highest cost included in the portfolio. Substantial quantities of coal are available, and new coal plants can be added if electrical loads grow rapidly or other resources prove unavailable. Council cost estimates are based on plants of 603 megawatt capacity and 75 percent availability.

WNP-1 and WNP-3

The Council found that two unfinished nuclear plants in Washington could have considerable value to the region if their output is needed within the next 20 years. Completing these plants—Washington Public Power Supply System Nuclear Projects (WNP) 1 and 3—could save the region as much as $1.2 billion compared to building new coal plants to supply the same amount of power. (See Figure 7.) However, the planned resources must be both reliable and available, as well as cost effective. Barriers to the completion of WNP-1 and 3 led the Council to consider the plants unavailable at present for the portfolio of resources. The Council has identified actions that need to be taken to resolve these barriers so the region can use these cost-effective resources if and when it needs them.

A major uncertainty surrounding WNP-1 and 3 involves the inability to get conventional low-cost financing to complete them. Pending litigation and current lack of need for the plants obstruct access to the bond market. Another barrier is the disparity between ownership of the plants and any likely need for them. Public agencies own WNP-1 and all but 30 percent of WNP-3, yet the power from these plants would probably not be needed to serve public utility loads over the 20-year planning period.

The question arises of how to pay for preservation and eventual construction of the plants. The Bonneville Power Administration is now paying 85 percent of the preservation costs. Unless substantial new loads are placed on the agency by the investor-owned utilities, the power from the nuclear plants will not be needed in the next 20 years. Consequently, Bonneville is paying for the preservation of resources it may never have cause to complete and some of its customers believe these costs are not properly shared among the region's ratepayers. This problem emphasizes the need to lower preservation costs to the minimum possible level and to begin efforts to address the allocation of preservation and potential construction costs.

WNP-1 and/or 3 may be included in a future portfolio when barriers to their completion are removed. In the meantime, the portfolio includes resources that could replace the plants if they are not available to meet future load growth.

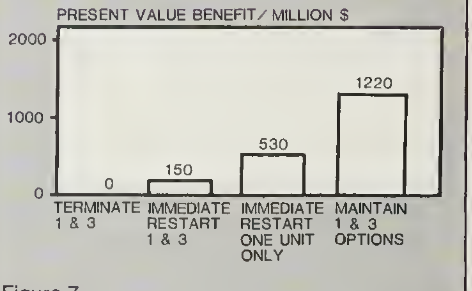


Figure 7
Value of WNP-1 and WNP-3.

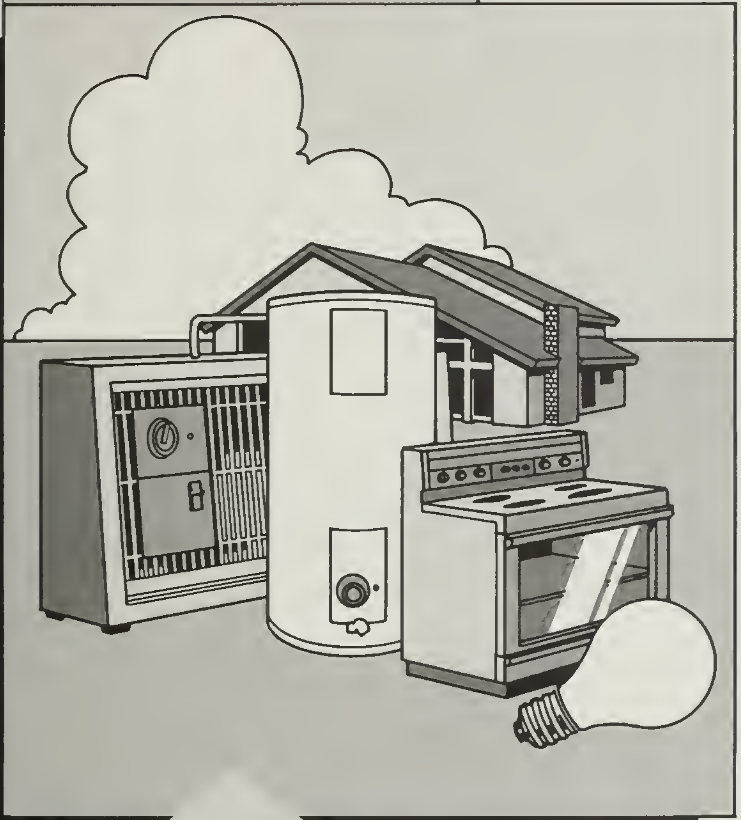
Other resources

The Council regards certain other resources as promising, but not presently available. These resources, primarily renewable energy resources, hold considerable promise for meeting the region's future energy needs. However, at present they fail to meet one or more of the criteria for inclusion in the resource portfolio. Geothermal costs, supplies and technology, for example, are not yet demonstrated in this region. Solar and wind costs are greater than the cost to build new coal plants. Use of municipal solid waste to power steam-electric plants is blocked by poor public acceptance and limited siting opportunities.

Promising resources include:

- The development of several hundred megawatts of hydropower that will require resolution of potentially unacceptable environmental impacts;
- The use of the region's apparently vast geothermal resource;
- Electricity gained as a byproduct of municipal solid waste burning;
- Production of electricity using either solar-thermal or solar-photovoltaic technologies;
- Wider application of wind energy technologies;
- Additional cogeneration opportunities that do not currently appear to be cost effective.

The draft power plan includes measures to continue demonstrations, feasibility studies and monitoring of all these technologies in the hope that their use will eventually be competitive with resources currently in the Council's resource portfolio.



In 1983, the region's residential sector consumed 5,216 average megawatts of electricity—about 36 percent of the region's total. Space heating is the largest category of electricity consumption in the sector; water heating is second. One-quarter of the electricity is used to operate lights and appliances.

Michael Cacy illustration

SCHEDULING RESOURCES

The resource portfolio describes the amount and type of new electrical power resources the Northwest needs to acquire, and in what sequence, to meet regional electricity needs over the next 20 years. The concept of a resource portfolio is analogous to an investor's portfolio. Both the Council and an investor choose the best mix of investments to reduce risk and maximize benefit. The Council seeks lowest cost; the investor desires greatest return. Like the investor, the Council must use judgment in considering attributes that cannot be quantified.

The Northwest Power Act requires the Council to give priority to resources which the Council determines to be most cost effective—that is, given all costs over the life of a measure or resource, it produces electricity at a lower price per kilowatt-hour than the next least expensive, and similarly available and reliable,

Resource Schedules

measure or resource. The Act also gives first priority to conservation, then to renewable resources, to generating resources using waste heat or generating resources of high fuel conversion efficiency, and finally to all other resources.

In selecting the resource portfolio described below, the Council first estimated the availability, reliability and cost of conservation and generation technologies. The Council also developed a range of forecasts of future energy demand. These forecasts indicate when the region will need new energy sources and how large that need is likely to be under low, medium-low, medium-high and high growth.

Different combinations of resources were then analyzed to arrive at a resource mix that provides the lowest cost of constructing and operating all resources in the portfolio. These costs include measures needed to eliminate or reduce each resource's impact on the environment in general, and fish and wildlife in particular.

Resource schedules

The timing and extent of new resource development depend on the level of regional electrical load growth. The Council has outlined a least-cost resource plan for all regional loads (see Figure 8), and a schedule for Bonneville's obligations if it continues to serve only its present customers, primarily public utilities and direct service industries. (See Figure 9.) The Council also developed a resource plan for Bonneville to follow if the investor-owned utilities first develop their own low-cost resources and then turn to Bonneville for help in meeting increased loads. (See Figure 10.) This last schedule resembles the overall regional schedule.

In all load growth scenarios for the regionwide plan, all conservation development begins before new generating resources are acquired. (See Figure 11.) During the early years at higher load growth rates, construction of smaller generating resources takes place while conservation programs continue to expand.

If the highest load growth occurs, it will probably consume the region's current surplus by 1990. (See Figure 12.) All major conservation programs would have to be brought up to full speed in the early 1990s, achieving a total savings of over 4,000 megawatts by the year 2005. The high load case requires the region to develop all the hydropower available at existing projects—approximately 255 megawatts—by 1993. The third major resource acquisition strategy, better use of nonfirm power, begins in 1994, with the full 1,960 megawatts achieved by 1998. The full 330 megawatts of cogeneration resources are secured by 1998. By the year 2000, the high load scenario requires the region to begin adding new coal plants to the power system. Seven large coal plants are needed by 2005.

The medium-high load scenario has the region beginning conservation programs in 1991. New building activity would grow more slowly than in the high load case, so only about 3,400 megawatts of conservation are available. Medium-high growth requires the region to develop all available hydropower by 1996, and employ all new nonfirm energy strategies over the period from 1997 to 2003. Cogeneration facilities would be acquired through 2004. By 2005, the region would need to purchase one additional coal plant.

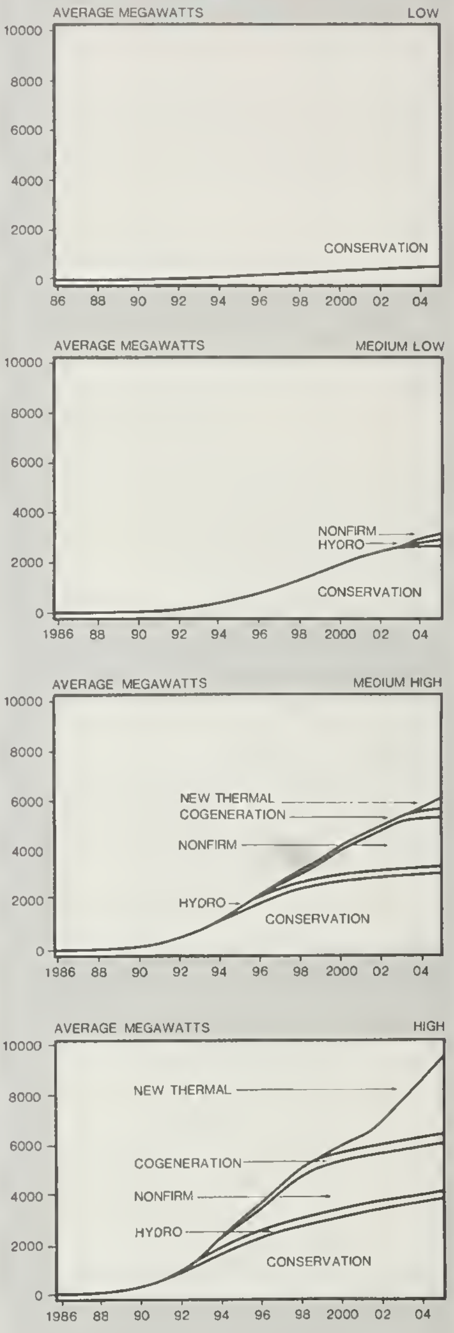


Figure 8
Resource schedule for the region as a whole.

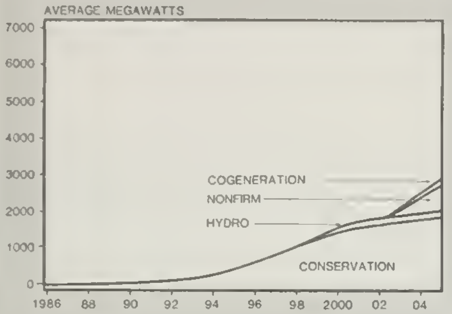


Figure 9
Resource schedule (high load forecast) for Bonneville's current customers only.

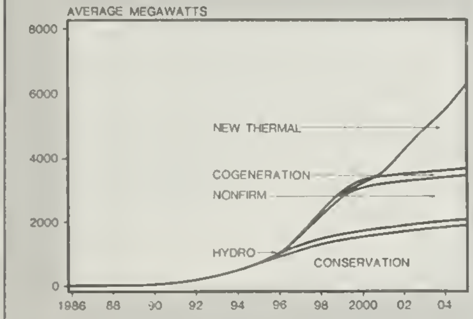


Figure 10
Resource schedule (high load forecast) for Bonneville with investor-owned utilities. (This graph assumes the investor-owned utilities develop their own conservation resources before turning to BPA.)

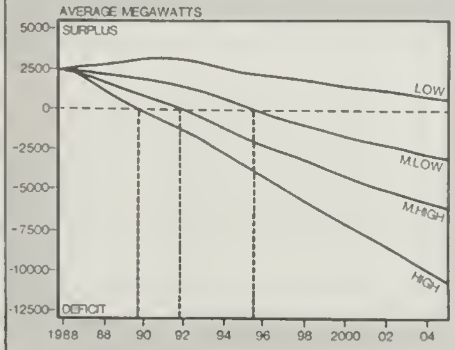


Figure 12
Regional electricity surplus and deficit.

The medium-low scenario requires few new resources. The current regional surplus is exhausted by about 1993, and conservation programs begin at a relatively slow pace in 1994. Lower building activity reduces the overall conservation opportunity to slightly more than 2,700 megawatts. This conservation is largely in place by 2003. By 2005, the region needs all available hydropower and secures about 200 megawatts of power from new nonfirm strategies.

If low loads occur, the region need not acquire any additional resources beyond the model conservation standards.

If Bonneville continues to serve only its current customers, conservation alone meets all requirements through the year 2005, in all but the highest load forecast. In the high scenario, conservation acquisition other than lost opportunity resources does not need to begin until 1996, reaching 2,000 megawatts of savings by the year 2005. In addition to this conservation, Bonneville would need to add 125 megawatts of hydropower, about 500 megawatts of nonfirm energy strategies, and 165 megawatts of cogeneration. Without additional investor-owned utility loads, Bonneville does not need to add new coal plants.

If Bonneville is called on to meet investor-owned utility loads, it will need to accelerate the acquisition of conservation in areas served by public utilities. Assuming load growth halfway between the two medium scenarios, Bonneville would need to start its conservation programs six years earlier than it would on its own, and achieve about 1,100 megawatts of savings by 2005. This is almost three times as much as would be needed without investor-owned utility loads.

Investor-owned utilities appear to have less surplus power than Bonneville. They will need new resources much sooner, and will have to turn to higher cost resources if they cannot gain access to the substantial conservation opportunities in public utility service areas.

Figure 11

Resources needed for the region as a whole—
Average Megawatts on-line by year 2005

	Load scenario (with year of first acquisition*)			
	High	Medium High	Medium Low	Low
Conservation	4,240	3,449	2,729	547
	1986	1986	1986	1986
New Hydro	255	225	255	n
	1993	1995	2003	
Nonfirm Strategies	1,962	1,962	178	n
	1994	1997	2004	
Cogeneration	330	330	n	n
	1994	1996		
Coal	3,164	452	n	n
	2000	2005		

n = not needed at all by 2005

*Resources will be developed at different rates, depending on regional need. The years given in the shaded area indicate the first arrival of the energy, not the year the resource is optioned or construction begins.

Lost Opportunities and Hydropower

PREVENTING LOST OPPORTUNITIES

Given the current surplus, the Draft 1985 Power Plan does not call for immediate acquisition of any major new resources—except "lost opportunity" resources. If not developed now, the cost effectiveness of certain resources could be lost forever. The primary example of such a resource is in the construction of new energy efficient buildings. Long after the current electricity surplus runs out, houses and commercial buildings built to current practice will still exist. And they will use approximately twice the energy they would have been using had they been built right in the first place.

For some savings it's now or never

That's why the model conservation standards for new construction are a priority in the Council's plan to secure the electricity needed by the region over the next 20 years. These standards set efficiency levels for space heating homes and for lighting, heating, air conditioning and ventilating commercial buildings.

For some electrical savings, it's now or never. Many conservation measures can't be added later for the same costs. Some things, such as very thick wall insulation, call for major reconstruction to install once a house is built. The expense at a later date may be prohibitive, while other measures may not be feasible to install at all after construction.

Built-in generating possibilities

The need to make use of opportunities as they arise is also true for some generating technologies. The opportunity to generate electricity with available water flows should be anticipated when new municipal water and hatchery supply systems are developed. Solid waste incinerators could be designed to recover energy for power generation. Landfills could be provided with methane collection systems for use in power generation.

These are examples of systems that have excess power available as a part of their operation. Their future use as power generators can be secured now by designing and constructing them so that generating equipment can be added easily later, when the power is needed. Making use of their waste energy to generate electricity would require less lead time, expense and environmental impact than developing other facilities specifically for power generation.

An inventory of opportunities

The Council's 1983 Power Plan called on the Bonneville Power Administration to develop an inventory of resources that could be lost to the region unless they are planned for or developed now. Bonneville's preliminary assessment includes the opportunities listed above, but also describes situations, such as the sale of the Northwest's current surplus power to other regions, where, unless provisions to recall the power are made now, the power may not be available when the Northwest once again needs it.

The Council's draft plan directs Bonneville to expand its study, specifying which resources will be most cost effective, when they need to be developed and what near- and long-term costs will be entailed.

BETTER USE OF THE HYDROPOWER SYSTEM

The Draft 1985 Power Plan introduces a new resource into the portfolio. The plan calls for strategies to use 2,000 megawatts of nonfirm hydropower. Nonfirm power gets its name from the fact that it is not always available.

The Northwest hydropower system

The annual energy capability of the Northwest hydropower system varies widely, depending upon rainfall and the accumulated snowpack. The available hydropower also varies dramatically within a single year, with the Columbia River discharging about 73 percent of its natural runoff between April and October and only 27 percent from November to March, when electrical loads are highest. Upstream storage projects enable the regulated flow to match the pattern of the region's loads, but only 40 percent of the runoff can be stored.

The worst water conditions on record for the Columbia River system are the four-year sequence from August 1928 to March 1932 and the more severe two-year sequence from September 1943 through April 1945. These periods are the base for hydro system planning.

Michael Cacy illustration

Electrical resources are planned, and long-term contracts are signed, on the basis of a minimum capability of the streamflow and reservoir system—a standard called "critical water." Critical water is the worst sequence of low water conditions encountered since recordkeeping began in 1879. In most years, however, the hydropower system produces far more power than this minimum.

The average annual output of the hydropower system exceeds critical energy capability by 33 percent, or approximately 4,100 megawatts—an amount equal to the output of five nuclear plants, and enough to supply four cities the size of Seattle for a year. During a good year the annual capability can be as much as 50 percent greater than critical period capability. The hydropower that exceeds the critical water production level is nonfirm power.

It is sold in and out of the region far more cheaply than what the region would have to pay for new resources. Currently, the highest priority uses for nonfirm power are to serve a quarter of the load required by direct service industries and to replace the most expensive Northwest generating resources. If more nonfirm power is available, California utilities and other out-of-region markets can buy it. Nonfirm energy that is not sold is sometimes spilled over dams.

If this nonfirm energy could be "firmed up"—that is, made more dependable—it has the potential to save the region $1.2 billion over the next 20 years by reducing the need to build new thermal plants. These savings are based on 2,000 megawatts of nonfirm energy backed up by combustion turbines.

Firming up nonfirm power

Council studies for the Draft 1985 Power Plan assessed the risks and benefits of different strategies for making better use of the large amounts of nonfirm hydropower available in most years. These strategies include the following ways to back up nonfirm energy so it can meet some of this region's firm loads:

1. intermittent use of combustion turbines;
2. short-term purchases of energy from other regions;
3. increasing the interruptible portion of the direct service industries' load (mostly aluminum companies). Under this voluntary plan, the nonfirm energy load of a company could be curtailed (interrupted) during periods of hydropower shortage in exchange for rate discounts.

The Council is not recommending a particular strategy at this time, but has called on the region to take further steps to study and confirm this resource for meeting future need. At the earliest, under highest load growth conditions, the Council anticipates a need for increased use of nonfirm energy by 1994.

Reliability is the key to increasing the value of nonfirm power. The nonfirm power has to be "firmed up" or "backed up" by other sources of energy so it can be counted on as a firm supply. Council studies show that combustion turbines—the most expensive backup method—would still be cost effective. These small oil or gas-burning plants are relatively cheap and quick to build and, although their fuel costs make them expensive to operate, they would only be needed, on average, 16 percent of the time. In combination with nonfirm energy, they would produce electricity more cost effectively than new coal plants and most cogeneration projects.

THE ACTION PLAN

Because the future is by definition uncertain, the Council developed an Action Plan that outlines short-term goals and activities to begin implementation of the 20-year power plan, yet provides flexibility to accommodate change. By regularly reviewing and updating this Action Plan, the Council will be able to accelerate or slow down the development of conservation and other resources, to keep pace with the region's growth and need for power.

The Action Plan mirrors the plan as a whole, with its emphasis on regional cooperation. While the largest portion of the Action Plan focuses on activities for Bonneville to carry out, there are also sections on Council activities, activities to promote regional cooperation, and a section with recommendations for the region's public utility commissions and investor-owned utilities.

The Action Plan's major focus is a list of objectives to be achieved by the Bonneville Power Administration. Bonneville in turn will develop work plans for achieving these objectives. The Council will review the work plans and call for public comment on them. The Council is giving Bonneville more opportunity to design specific programs than it did in the 1983 plan.

Bonneville's work plans should list the Council's objectives along with a description of the tasks or activities that will achieve those objectives, milestones for expected start and completion dates, and relative level of effort required for each of the major parts of each plan. Bonneville is expected to describe its budget and staffing needs, and consult with interested parties in the development of the work plans. The Council expects to adopt its power plan in December 1985, and expects Bonneville to prepare work plans which would be implemented beginning October 1, 1986.

The major themes of the draft 1985 Action Plan include the following:

- acquire "lost opportunity" resources—those cost-effective resources that, if not pursued now, would be lost to the region forever;
- continue building the capability to achieve conservation in the commercial, industrial and agricultural sectors;
- continue research, data collection and demonstration of promising resources;
- address the issue of allocating costs for potential options, such as Washington nuclear plants 1 and 3, and work toward overcoming barriers to their completion should the power be needed in the future;
- develop strategies to make better use of the hydropower system;
- find ways to reduce the uncertainty created by fluctuations in aluminum industry loads.

The amount of space heating needed in a home is affected by the waste heat from appliances and heat from people. A person contributes about 520 kilowatt-hours per year to the heating of a home in the form of body heat.

Michael Cacy illustration

A primary goal of the Action Plan is the creation of mechanisms to enable utilities with surplus power to transfer conservation to utilities that need power. Equally important are mechanisms for mutually beneficial exchanges of power outside the region.

Research, development and demonstration programs are called for to ensure the region's access to the lowest cost and most reliable resources when they are needed. Demonstration programs help agencies such as Bonneville and state and local governments experiment with and evaluate various mechanisms and strategies for attaining resources. These programs also provide training and a structure so that a delivery system is established and available when needed.

The Council believes that setting these priorities will facilitate Bonneville's meeting both its current loads and additional loads, if and when they appear. If new loads require added resources, the Council will amend the Action Plan to provide for them.

Bonneville activities

The following are brief summaries of major areas of Bonneville activity in the Action Plan.

New residential and commercial buildings

Since most residential and commercial buildings constructed today will last beyond the current surplus, it is important to capture all cost-effective conservation at the time the buildings are constructed. Consequently, the major emphasis in the Action Plan is on promoting the adoption and implementation of programs that achieve energy savings comparable to the model conservation standards. These standards, adopted in the 1983 plan, set energy efficiency requirements for new buildings.

The Council has begun a procedure to amend the model conservation standards in an action separate from this draft plan.[3] For additional details regarding these proposed changes, contact the Northwest Power Planning Council. Also, see the news story on page 31 of this issue.

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[3] Proposed changes related to the model conservation standards (MCS) have been introduced as amendments to the 1983 Power Plan, rather than as part of this 1985 draft plan. The purpose was to provide ample notice of changes to the MCS before January 1986, the deadline set in the 1983 plan for implementation of the standards.

New manufactured housing

A large number of new homes purchased in the Northwest are manufactured homes. Although the federal Department of Housing and Urban Development (HUD) regulates the manufactured housing industry, the Action Plan calls for encouraging more energy efficient construction in these homes through marketing and financial incentives. Working with HUD, Bonneville should aim for a target penetration of 50 percent of all manufactured housing built to the regionally cost-effective limit by 1990. The Action Plan also calls for data collection on cost and performance of these homes.

The Northwest's population was 8 million in 1980, an increase of more than twice the rate of U.S. population growth since 1970. This growth was more than one-third faster in the 1970s than during the 1950s and 1960s. Idaho was the region's fastest growing state in the 1970s, the slowest in the 1960s.

Michael Cacy illustration

Existing residential buildings

The region has almost ten years of experience in weatherizing existing homes and has demonstrated the capability to achieve these energy savings. To hold down costs and to minimize increasing the surplus, the Action Plan calls for reducing the size of the existing residential weatherization program to a minimum viable level, which could conceivably be zero, by fiscal year 1987 and maintaining that level through fiscal year 1992.

Care should be taken to ensure that energy and dollar savings are not lost through partial weatherization by failing to install those components that cannot be added cost effectively later on.

The residential weatherization program, even at the reduced level, should operate equitably across all segments of the population, achieving proportional penetration rates in low-income and rental housing. The Council also recommends that Bonneville establish a rating system or certification which indicates energy efficiency of weatherized residences. This certification would be used by buyers, sellers, renters, landlords, realtors and bankers as a way to include the cost of heating in the decision to buy or rent a dwelling.

Existing commercial, industrial and irrigation facilities

The Action Plan seeks to determine the size, cost, and availability of conservation in existing commercial buildings, industrial plants and irrigated farms, as well as the lead time and the mechanism for acquiring the conservation. Major activities to achieve these objectives should focus on ensuring that no cost-effective resources are lost in any of the pilot programs.

Commercial: The region is developing the capability to conserve energy in the commercial sector, albeit more slowly than the Council anticipated when the 1983 plan was adopted. To speed this development, activities in this Action Plan include a detailed assessment of results from 1983 plan demonstration projects and research and development of promising energy conservation measures, such as energy management control systems and advanced lighting technologies.

The Action Plan calls for shared efforts to transfer conservation between utilities and to make better use of the region's hydropower system.

Industrial: Little progress has been made in demonstrating an ability to acquire industrial conservation when needed. The Action Plan focuses on simple, streamlined approaches to acquiring industrial conservation.

Specifically the Action Plan establishes a budget of $5 million each year for fiscal years 1987-1988 and calls for Bonneville to contract with 20 industries to purchase conservation resources. The Action Plan also relies on Bonneville to conduct research and development activities in conjunction with industries to determine the potential costs and savings from efficiency improvements in industrial processes.

Irrigation: The existing incentive program offered by 22 utilities has been well received. The Action Plan calls for continuation of technical and financial assistance to improve and monitor the energy efficiency of new systems, and to develop a program of technical and financial assistance to irrigators to make cost-effective energy conserving changes to their systems.

Residential and commercial appliances

Energy efficient appliances represent a significant source of low-cost conservation savings. The goal in this area is to encourage the Northwest states to establish residential appliance standards equivalent to those going into effect in California by 1992 and to determine the costs and savings of more efficient appliances, especially in the commercial sector. Specific Bonneville activities include technical assistance to states to help them develop appliance standards, documentation of costs and savings from commercial appliance improvements, and exploration of ways to encourage consumers to purchase an energy efficient appliance.

State and local government programs

Action items are designed to strengthen state and local government participation in the full implementation of the plan. The four Northwest states and over 900 cities, towns and counties have a direct interest in and, often, direct legal authority over many elements in the plan.

The Action Plan calls for continuing those programs that provide technical and financial assistance for identifying cost-effective conservation in new and existing commercial and residential areas, and in agriculture and government. Bonneville should continue to support education and training through programs such as the Energy Extension Service.

Training and education for the shelter industry and for those involved in implementing the model conservation standards are also called for. The Institutional Building Program should be maintained at 1985 levels and should be converted from an acquisition program into a research program. The Action Plan encourages state and local governments to explore alternative mechanisms for financing conservation. Strategies such as revolving loan funds, varying incentive levels, and third party contracting can help cost-effective conservation become a reality.

Lost opportunity generating resources

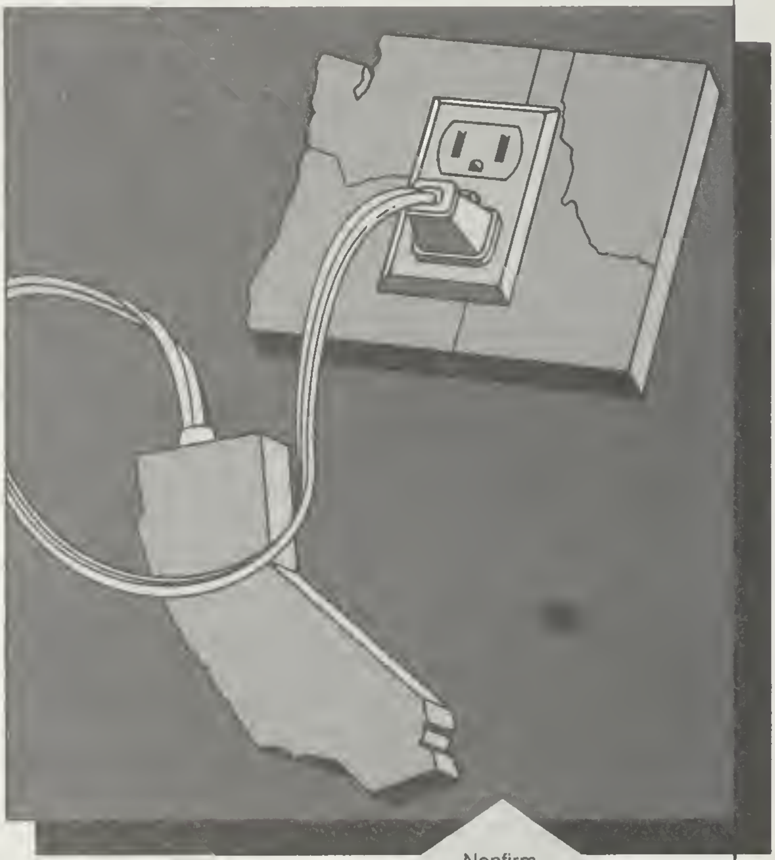
Lost opportunity generating resources are resources which, because of physical, financial or institutional characteristics, may lose their cost effectiveness unless actions are taken to develop these projects or to secure them for future use. Examples include scheduled non-power projects with electrical generating potential, such as municipal water supply systems and solid waste incinerators. Bonneville has begun monitoring potential lost opportunity generating projects.

The Action Plan calls on Bonneville to refine and to expand its inventory of potential lost opportunity generating resources. In addition, Bonneville should develop and implement a process for routine evaluation of potential lost opportunity generating resources and for acquiring or otherwise securing these resources where it is cost effective to do so.

Management of the resource option inventory

Resources that have been secured as options require care to preserve their availability and cost effectiveness. If load growth occurs at the medium-low, or greater levels, options will have to be secured to meet electrical demand.

To ensure that all options are maintained in a condition that allows them to be developed as cost-effective resources when needed, the Action Plan calls for Bonneville to develop and implement a policy for maintaining options in the inventory. This policy must consider physical preservation, renewal of licenses and permits, collection of environmental data and maintenance of land options. Periodic reevaluation of the cost effectiveness of options in the inventory should also be provided.



Nonfirm energy is currently sold to the direct service industrial customers of the Bonneville Power Administration, the region's generating utilities, and Southwest utilities. From Nov. 1983 through Feb. 1985, Bonneville sold 378 average megawatts to Northwest utilities and 2,278 to Southwest utilities.

Michael Cacy illustration

WNP-1 and WNP-3 are potential options to the region. These plants will be lost to the region unless actions are taken to maintain them and to resolve barriers to their completion. The Action Plan calls on Bonneville to resolve the barriers to completion of WNP-1 and WNP-3 and to reassess and minimize the costs of preserving the two plants.

Improvement of Bonneville's ability to develop regional resources

Due to the current surplus, there appears to be no need in the near term for Bonneville to develop major new generating resources. However, occasions may arise for limited resource acquisitions that are consistent with the power plan. These include:

- acquiring resources to test the options concept or other mechanisms for resource acquisition;
- acquiring certain very low-cost resources that have value even during a surplus;
- developing or securing options on resources that would otherwise be lost to the region;
- developing or demonstrating new resource types;
- developing options held in the inventory that have been found to be cost effective.

A concerted effort to study the process for acquiring resources and to resolve areas of concern should be completed prior to the time the region must begin to secure options to meet load growth. The product of this work should be a demonstrated process for acquiring options. Efforts were initiated in the 1983 plan to identify and resolve potential constraints to the options concept. The results of these efforts have been positive and will provide a sound foundation from which further improvements can evolve.

To further improve the ability of Bonneville to develop resources when needed, the Action Plan calls for continued development and demonstration of

In order for the Northwest to obtain the lowest cost resources throughout the region, cooperation among regional power entities will be necessary.

the options concept, development and demonstration of methods to evaluate resource cost effectiveness, and a uniform policy for acquiring resources. This policy should be based on the model process for securing resources described in Appendix I-A of the draft plan.

Confirmation of potential resources

Several strategies are potentially available for backing up nonfirm hydropower. They include the use of combustion turbines, power purchases, adjusting critical water standards and increasing electrical load interruptibility. The Action Plan relies on Bonneville to evaluate each of these strategies and to develop and test methods for their implementation.

Intertie access policy

The Pacific transmission intertie system is a resource of great value. Bonneville's long-term intertie access policy could provide an important mechanism for encouraging regional cooperation and appropriate resource development.

The Action Plan calls on Bonneville to allow longer-term sales over the interties and to give priority to transactions that provide the greatest flexibility for meeting future uncertainties. Firm sales with provisions to call back the energy when necessary and seasonal exchanges of power are examples of such transactions.

Access to Bonneville's interties should not encourage resource development that is counter to cost-effective implementation of the plan and should encourage the development of lowest cost resources first. The policy, while assisting in effective use of the current surplus, should not encourage the long-term development of Northwest resources solely for other regions.

Council activities

The Council has included actions which it intends to take as part of its regional power planning and monitoring responsibility.

Planning, research, development and demonstration

Power plans, like any other plans, are only as good as the data that went into the decisions that make up the plans. Continued refinements to the Council's data base are needed. Particular areas of concern include cost, performance and environmental characteristics of the various technologies.

The Council is also concerned that research in support of regional power planning efforts be conducted and supported equitably among the region's utilities. The Council will work with Bonneville to develop a coordinated work plan to maintain and update the resources and technology data base. By coordinating this effort, the Council hopes to avoid duplication of work and expenditures. The work plan will include assessments of potential efficiency improvements to the hydropower system and transmission facilities, and research regarding promising resources such as wind and solar energy.

Monitoring plan implementation

It is important that the Council be aware of how this plan is being implemented and how the region's energy future is unfolding. The Council has developed a program to monitor implementation of the plan. This program also helps the Council respond quickly to correct the plan if regional load growth requires measures not currently in the Action Plan. Quarterly reports on the progress of plan implementors are critical to this monitoring program.

help carry out this study, the Council will assist in the formation of a technical committee of representatives of interested West Coast utilities, planning agencies and utility commissions, including Canadian utilities in British Columbia and Alberta.

This action will ensure that the Council is kept informed about current and future opportunities for interregional cooperative planning. With information provided through this study, the Council can factor import/export opportunities into its planning rather than having to react to activities that are outside of its planning process. The Council will take no part, other than supplying information to interested parties, in trying to establish an agreement among parties.

Activities to promote regional cooperation

In order for the Northwest to obtain the lowest cost resources throughout the region, cooperation among regional electrical power entities will be necessary. The activities contained in this section of the Action Plan include recommendations for Bonneville, the region's public utility commissions and investor-owned utilities to work together to resolve several problems which are currently contributing to the region's uncertain energy future. These recommendations include actions by Bonneville to minimize both the cost and level of uncertainty associated with the rate charged for power from new resources. In addition, Bonneville should develop specific policies for the allocation of new resource costs, including the costs of options such as the Washington nuclear plants. Shared efforts to transfer conservation between utilities and to make better use of the region's hydropower system are also called for.

Recommended activities for the region's public utility commissions and investor-owned utilities

Throughout the development of this draft power plan, the Council has assumed that the region as a whole would cooperate in the process of developing the most cost-effective electrical energy resources first. The Council has demonstrated that as much as $3.8 billion can be saved through such cooperation.

The Action Plan focuses primarily on Bonneville's role, but cooperation from the public utility commissions and investor-owned utilities would greatly contribute to achieving the lowest cost electrical energy future for the Northwest. Consequently, the Council included in its Action Plan several recommendations for public utility commissions and investor-owned utilities.

These recommended actions correspond to those required of Bonneville and include incentives from investor-owned utilities to help achieve regionwide new residential and commercial construction levels that are consistent with the model conservation standards, and coordinated policies for acquiring new resources and selling existing surplus power outside the region. In addition, the Council's Action Plan invites the public utility commissions and investor-owned utilities to join Bonneville in demonstrating new conservation opportunities in the commercial and industrial sectors. ■

Goals of the Draft Plan

The Council developed this draft plan with the following specific goals in mind:

- To provide the region an adequate and reliable supply of electrical energy at the lowest possible cost;
- To select resources following the cost effectiveness principles and priorities in the Northwest Power Act;
- To develop a flexible strategy so that the plan can be modified as conditions change and new information becomes available;
- To encourage the greatest rate predictability and stability for the region;
- To evaluate all resources from a total regional system perspective to ensure their compatibility with the existing hydropower system;
- To select resources with the least adverse impacts on the environment, or those with adverse environmental impacts which can be mitigated;
- To select resources that are consistent with protecting and enhancing fish and wildlife, and that mitigate power system impacts on fish and wildlife.

How to Comment on the 1985 Draft Plan

The comments, written and oral, that the Northwest Power Planning Council receives on this draft power plan are among the most important aspects in the development of the 1985 Power Plan. To ensure that the comments are used most effectively, the Council asks that you follow these guidelines in their preparation:

INSTRUCTIONS FOR ORAL COMMENT AT HEARINGS

Hearings are being held in the following locations:

Boise, Idaho, Downtowner Red Lion	October 17, 1985, 10 a.m.
Missoula, Montana, Village Red Lion	October 11, 1985, 9 a.m.
Salem, Oregon, Employment Building	October 15, 1985, 10 a.m.
Seattle, Washington, Federal Building	October 21, 1985, 9 a.m.

1. Requests for time slots must be made at least two workdays prior to the hearing. Contact Ruth Curtis, information coordinator, at the Council's central office, Suite 1100, 850 S.W. Broadway, Portland, Oregon 97205 (503-222-5161 or toll free 1-800-222-3355 in Idaho, Montana and Washington or 1-800-452-2324 in Oregon).

2. Those who do not sign up for time slots will be allowed to testify as time permits.

3. Use the hearing to *summarize* your written comments. The comments themselves should not be read.

4. Ten copies, if possible, of hearing testimony should be submitted to the Council recorder at the hearings. This person will be sitting at a table near the Council members and will be identified at the start of the hearing by the chairman. When preparing these copies, refer to the instructions below for written comments.

5. A 15-minute guideline is suggested for comments given at hearings. On certain occasions, the number of people signed up to talk may be so large that it will be necessary to impose stricter limits in order to allow all commentors a hearing.

6. Your appearance at more than one hearing is unnecessary. Site scheduling preference will be given to individuals and groups that have not testified at other hearings.

INSTRUCTIONS FOR WRITTEN COMMENT

1. All written comments must be received in the Council's central office, Suite 1100, 850 S.W. Broadway, Portland, Oregon 97205 no later than 5 p.m. on Friday, October 25, 1985. Comments received after that time will not be considered.

2. Comments should be clearly marked "Draft Power Plan Comments."

3. Your written comments should be specific and concise and refer to chapters or page numbers in the plan. Please avoid grouping comments on one page that concern different sections of the plan.

4. If appropriate, submit a "marked up" copy of the draft (or appropriate sections) indicating suggestions and/or revisions. Suggested deletions should be lined out and placed in parentheses, like this (~~Line out portions of the draft to be deleted.~~) Suggested new language should be underlined, like this: Underline all new language.

5. Please type your comments (double-spaced), if possible. And use only one side of the paper.

6. Provide ten copies of all comments and supporting materials if at all possible.

1985 Draft Plan Synopsis

VOLUME I

CHAPTER 1: ELECTRICITY—CORNERSTONE OF THE NORTHWEST ECONOMY

Thanks to the largest coordinated hydroelectric system in the world, the Northwest has historically enjoyed the nation's cheapest electricity. This resource has been critical to the region's economic growth. The goal of the plan is to ensure the Northwest maintains the lowest cost electrical energy future. This chapter details the recent history of electrical development in the Northwest and the actions that led to the Northwest Power Act and the Northwest Power Plan.

CHAPTER 2: THE REGIONAL PICTURE TODAY—PROBLEMS AND SOLUTIONS

Currently the Northwest has a 2,300-megawatt surplus of electricity that could last from five to more than 20 years. This surplus is distributed unevenly among the region's utilities. Through cooperative actions, these differences can be used as opportunities to attain the lowest possible cost energy future for the region. Developing resources on a regional basis could save the Pacific Northwest $3.8 billion.

Cooperation is particularly important in three areas: 1) the need to develop regionally cost-effective conservation before turning to other, more expensive resources; 2) the need to properly allocate the cost of acquiring and holding resource options that provide flexibility for the regional power system; and 3) the need to make better use of the hydropower system.

The chapter also provides an overview of the current status of the region, including uncertainties which influence the Council's power planning strategy.

CHAPTER 3: THE COUNCIL'S PLANNING STRATEGY—RISK MANAGEMENT.

This chapter sets out the overall goals of the plan and the Council's planning strategy.

Because the future is not known, the plan must be flexible and able to adapt to changing needs. At the same time it must choose the most cost-effective route to providing enough electricity to meet any demand. The Council's planning strategy evaluates the contribution of specific resources to power system cost by examining the way resources work together over a wide range of possible loads. Risks are lessened by using flexible resources that can be modified to meet changing demands for electricity. Conservation is an example of such a resource.

The plan includes a process called "optioning" to license and design resources and keep them "ready on the shelf" until they are needed. This gives planners additional years to assure that demand levels in the region warrant a decision to enter the expensive construction phase.

CHAPTER 4: FUTURE ELECTRICITY NEEDS

This chapter presents the range of forecasts for electrical energy demand. These forecasts play three roles in the power plan: 1) they are the basis for deciding how much electricity is needed to support a healthy and growing economy; 2) they explore and define the uncertainty surrounding future resource needs; and 3) they are an essential component in assessing the effects of conservation actions taken as part of the Council's power plan.

The analysis examines four forecasts representative of high, medium-high, medium-low and low electrical demand growth in the Northwest. The chapter also details the economic and demographic trends that shaped the forecasts and establishes the assumptions used in these forecasts.

CHAPTER 5: THE EXISTING REGIONAL ELECTRICAL POWER SYSTEM

This chapter examines the existing resources and resource capacities available to the region, including hydropower, other renewable and cogeneration resources, coal and nuclear plants, and imported power.

The northwest's hydropower system produces approximately two-thirds of the total electricity used by the region. Thermal generating resources, such as coal and nuclear plants, provide most of the remaining electricity. Even with high economic growth, hydropower would still produce almost half the region's electricity at the turn of the century.

This chapter covers the major operating characteristics of the Northwest's electrical power system.

The Draft 1985 Power Plan is contained in Volume I.

This includes the basic planning strategies, the important regional power issues, the lowest cost mix and schedules for new resource acquisitions, and the Action Plan the region needs to follow to ensure an adequate and reliable supply of electricity at the lowest cost.

Volume II contains the supporting material for the conclusions in Volume I. It describes the analytical work and technical details leading to the policy decisions presented in the plan.

CHAPTER 6: CONSERVATION RESOURCES

Conservation is the Council's priority resource for meeting the Northwest's future electricity needs. With high economic growth, close to 3,900 average megawatts of conservation are available at an average cost of 2.1 cents per kilowatt-hour. This is equal to more than eight coal plants at less than half their cost.

This chapter assesses the amount of new conservation available and its cost. The Council considered cost-effective conservation to be measures whose systemwide cost was less than that of a comparable amount of electricity produced at a new generating facility. In addition, the Northwest Power Act grants conservation a 10 percent cost advantage over other resources.

The chapter breaks conservation down into individual sectors for analysis.

CHAPTER 7: GENERATING RESOURCES

A variety of generating resources are potentially available to meet future Northwest electricity demand. Each was analyzed to determine its availability to the region, its reliability and cost effectiveness. Generating resources that met these criteria are included in the resource portfolio. Others, classified as promising, are recommended in the Action Plan for further research, development or demonstration.

Resources reviewed include coal, geothermal, hydropower, municipal solid waste, natural gas, nuclear power, solar, wind, wood residue, cogeneration and waste heat. Also examined were improvements to the efficiency of existing generation projects and the hydropower system.

The Washington nuclear plants 1 and 3 were found to be cost effective, but a number of legal and financial barriers to their completion make it impossible to rely on power from these plants until these barriers are overcome.

CHAPTER 8: RESOURCE PORTFOLIO

The 20-year resource portfolio identifies what resources must be developed, to what extent, how soon, and in what order. It includes the potential range of future energy needs, and the lowest cost mix of new resources necessary to meet those needs. Like a stock portfolio, the resource portfolio is diversified and carefully selected to lower economic risks faced by the Northwest.

If the region experiences high economic growth, the following resources need to be developed in this order: conservation, available hydropower, better use of the hydropower system, cogeneration, and coal-fired power plants. If growth is low, conservation alone could take care of all the region's new electrical power needs. Resource schedules for medium-low and medium-high growth are also included.

CHAPTER 9: 1985 ACTION PLAN

The Action Plan sets down those steps that must be taken in the near term to realize the long-term goals of the plan. It summarizes the progress made in implementing the 1983 plan and, building on that progress, establishes new direction for the near term. It contains a detailed plan for the Bonneville Power Administration and recommended actions for the region's other power entities, including investor-owned utilities and the public utility regulatory commissions.

Given the current regional surplus of electricity, the Action Plan emphasizes acquiring only lost opportunity resources in the near term. These are resources that must be secured now or they will lose their cost effectiveness forever. It also stresses the need to build the capability to acquire other new resources so that they are available when needed.

CHAPTER 10: CONCLUSION

This chapter is a brief summary of the key points of the plan. It is followed by a glossary of terms used in the plan.

APPENDIX I-A: MODEL PROCESS FOR ACQUIRING RESOURCES

The Council's Options Steering Committee and several of its task forces suggested the Council develop an overall approach to acquiring options on, and the eventual construction of major resources (see Volume I, Chapter 3). In response, the Council developed this model process for acquiring resources, which accommodates acquisitions by both Bonneville and other regional utilities.

APPENDIX I-B: METHOD OF SURCHARGE

The Northwest Power Act authorizes a surcharge on Bonneville customers whose jurisdictions fail to implement conservation measures that achieve savings of electricity comparable to those saved by the model conservation standards. The Council has drafted a methodology for calculating this surcharge.

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1985 Draft Plan Synopsis

VOLUME II

CHAPTER 1: INTRODUCTION

CHAPTER 2: ECONOMIC, DEMOGRAPHIC AND FUEL PRICE ASSUMPTIONS

Economic and demographic assumptions are the dominant factors affecting the forecasts of the demand for electricity. Demand generally parallels economic growth, but is influenced by shifts in the relative price of electricity and other fuels, by changes in the composition of economic activity, and by the gradual replacement of inefficient buildings, factories and machines with more efficient ones.

These influences are extremely important and, at the same time, highly uncertain. The range of future electricity demands included in the plan is designed to reflect the extent of this underlying uncertainty.

CHAPTER 3: FORECAST OF DEMAND FOR ELECTRICITY

This chapter describes in more detail the demand forecasts presented in Chapter 4, Volume I.

CHAPTER 4: FINANCIAL ASSUMPTIONS AND COST EFFECTIVENESS OF CONSERVATION

Financial variables are used in estimating the quantities and costs of resources, projecting future demand for electricity, and simulating the operation of the power system with alternative sets of resources. In all of these analyses, the values for variables such as escalation rates, cost of capital, and discount rates are important because they directly influence the outcome of the analysis. These values must be consistent throughout all of the analysis.

CHAPTER 5: CONSERVATION RESOURCES

This chapter contains detailed descriptions of the calculations used to assess the amount and cost of achievable conservation available to the Northwest.

CHAPTER 6: GENERATING RESOURCES

This chapter details existing resources and the basis for selecting new generating resources. It also provides the distribution of existing resources between public and investor-owned utilities.

CHAPTER 7: BETTER USE OF THE HYDROPOWER SYSTEM

The hydropower system uses the worst sequence of low water conditions on record for planning purposes. In most years, large amounts of hydropower are available in excess of this critical period amount. The Council's studies assessed various strategies for improving the use of this electricity and concluded that such improvements have the potential of saving the Northwest about $1.2 billion by reducing the need to build new thermal plants.

CHAPTER 8: RESOURCE PORTFOLIO

This chapter describes in detail the Council's resource portfolio and the analytical methods and computer models used to develop it.

CHAPTER 9: CONSIDERATION OF ENVIRONMENTAL QUALITY AND FISH AND WILDLIFE

The Act requires the Council to give due consideration to environmental quality and fish and wildlife protection in its plan.

Environmental quality and fish and wildlife concerns were analyzed for various resources. The costs for pollution abatement equipment and fish and wildlife mitigation required under state and federal regulations were included in the estimates of generic resource costs. This information was used in selecting the individual components of the resource portfolio. This chapter describes the process the Council used to give due consideration to environmental quality and fish and wildlife in its preliminary selection of resources.

CHAPTER 10: PUBLIC INVOLVEMENT

An extensive public involvement program is being conducted to ensure widespread participation in the development of the 1985 Power Plan. The distribution of this draft for public comment is part of that effort. None of the decisions in it are final. They are all open to change based on the comments the Council receives.

APPENDIX II-A: METHOD FOR DETERMINING ENVIRONMENTAL COSTS AND BENEFITS

The Council has developed a method for the Bonneville Power Administration to use in assessing the environmental costs and benefits of specific resource acquisition decisions.

APPENDIX II-B: CONDITIONS FOR BONNEVILLE FINANCIAL ASSISTANCE TO HYDROPOWER DEVELOPMENT IN THE REGION

In order to protect the Northwest's fish and wildlife when hydropower projects are developed, various conditions must be met when the Bonneville Power Administration finances or assists with the development of these projects. ■

Public comment sought on proposed amendment to model standards

Hearings were being held throughout the Northwest during August and the first part of September to obtain public comment on an amendment proposed to sections of the 1983 Northwest Power Plan that concern energy efficient standards for new construction. The public comment period closes September 13, 1985, and the Council is expected to make a decision about adopting the amendment at its October 9-10 meeting in Missoula, Montana.

The principal effect of the proposed amendment would be to extend the deadline for adopting the Council's full standards for new electrically heated residential buildings to January 1989, with an interim level of savings going into effect in 1987. Currently, the Council's power plan, adopted in 1983, calls for the full standards to go into effect in January 1986.

The standards are designed to reduce the Northwest's need to build expensive new thermal plants in the future by dramatically reducing energy consumption for new buildings. Homes built to the standards would use approximately 60 percent less energy for electrical space heating than homes built to current practice. Failure to implement the standards or equivalent energy-saving measures would make utilities liable for a 10 percent surcharge on the power they buy from the Bonneville Power Administration. The surcharge, authorized by the Northwest Power Act, is designed to recover the costs to the region of the failure to implement the standards.

Hearings held in September include the following:

- Seattle, Washington, 9 a.m., September 9, 1985, at the Federal Building, Room 2866, 915 Second Avenue.
- Missoula, Montana, 1:30 p.m., September 13, 1985, at the Missoula Sheraton, 200 S. Pattee Street.

The proposed amendment, which is subject to change based on public comments, has the following major features:

The proposal includes a 1987 interim energy savings level for the region which can be achieved through building codes, utility-sponsored marketing programs for energy-efficient homes (such as the Super Good Cents program), utility-funded incentive programs, or a combination of the above. A pre-approved alternative in the proposal involves utilities achieving a percentage of new electrically heated homes built to the model conservation standards. A utility which complies with any of these programs or which develops an alternative program to save an equivalent amount of energy by January 1987 will avoid the surcharge.

By January 1989, new Northwest residences should be built to the Council's current model conservation standards. The 1989 standards include additional conservation features which are cost effective to the region's electrical power system. The Council has proposed that the regional electrical power system, working through Bonneville, provide an incentive payment to new homebuyers for homes built to the 1989 standard.

Equivalent savings for 1987 can be attained if a percent of new homes are built to the full standards. These penetration rates are as follows: Washington, 10 percent; Oregon, 25 percent; Idaho, 42 percent; Montana, 28 percent. The penetration rates are based on differences in energy code enforcement and current building practice in the four states. For example, because Washington recently adopted a stricter new statewide energy code, the difference between building practice and the Council's interim saving level is relatively minimal.

The proposal also includes programs to help homebuilders and local and state governments in the implementation of the model conservation standards. –*SE*

Fish and wildlife program to be amended

The Northwest Power Planning Council will be accepting recommendations for amendments to its Columbia River Basin Fish and Wildlife Program through December 16, 1985. The program, which was adopted by the Council on November 15, 1982, addresses fish and wildlife losses in the Columbia River Basin that resulted from the development and operation of hydroelectric dams in the Basin.

On October 10, 1984, the Council adopted amendments to the program based on recommendations from over 100 groups and individuals. The current amendment process, like the last one, is open to Indian tribes, federal and state fish and wildlife agencies, water and land management agencies, electric power producing agencies and their customers, and members of the public.

Recommendations should focus on measures which can be implemented by the Bonneville Power Administration, the Bureau of Reclamation, the U.S. Army Corps of Engineers or the Federal Energy Regulatory Commission. These measures must be designed to "protect, mitigate and enhance" fish and wildlife in the basin, including related spawning grounds and habitat, affected by the development and operation of any hydroelectric project on the Columbia River and its tributaries. Care should be taken in making recommendations, to avoid duplicating measures already contained in the program.

The amendment process will include a series of consultations, public hearings throughout the region, public comment at Council meetings, opportunities to make written comment and analysis by the Council and its staff.

All proposed amendments must be submitted on the form developed for this purpose. Copies of this form and related materials are available from the Council. Call Janie Pearcy, Division of Fish and Wildlife, 1-800-222-3355 (Idaho, Montana and Washington), 1-800-452-2324 (Oregon), and 222-5161 in Portland, Oregon. –*CC*

COUNCIL PUBLICATIONS ORDER FORM

Please send me a copy of the following publications of the Northwest Power Planning Council.

(Note: not all publications are available immediately, but will be sent to you as soon as they are.)

PUBLICATIONS

☐ Draft 1985 Power Plan, Volumes I & II

☐ Fifth Annual Report of the Northwest Power Planning Council

☐ Columbia River Basin Fish and Wildlife Program, Amendment Application Form (1985)

☐ Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin

MAILING LISTS

Please add my name to the mailing lists for the following newsletters.

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ORTHWEST ENERGY NEWS

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Idaho

Northwest Power Planning Council
Statehouse Mail
Towers Building
450 West State
Boise, Idaho 83720

Telephone: 208-334-2956

Council Members:
W. Larry Mills
Robert Saxvik, chairman

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620

Telephone: 406-444-3952

Council Members:
Morris Brusett
Gerald Mueller

Oregon

Northwest Power Planning Council
505C State Office Building
1400 S.W. Fifth Avenue
Portland, Oregon 97201

Telephone: 503-229-5171

Council Members:
Donald Godard
Roy Hemmingway

Washington

Northwest Power Planning Council
Olympic Tower Bldg., Suite 700
217 Pine Street
Seattle, Washington 98101

Telephone: 206-464-6519

Council Members:
Charles Collins
Kai Lee, vice chairman

Central

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, Oregon 97205

Telephone: 503-222-5161
Toll Free: 1-800-222-3355
(1-800-452-2324 in Oregon)

Executive Director: Edward Sheets
Information Director: Dulcy Mahar

NORTHWEST
ENERGY NEWS
is published bi-monthly by Northwest Power Planning Council, 850 S.W Broadway, Suite 1100, Portland, Oregon 97205.

The Northwest Power Planning Council is required to develop a program to restore the Columbia fisheries and a regional electric energy plan, to be carried out by the Bonneville Power Administration, emphasizing cost-effective conservation and renewable resources.

Executive Editor: Carlotta Collette
Graphic Design: Linda Sullivan
Assistant Editor: Steve Engel
Special Departments Editor: Ruth Curtis

EDITOR'S NOTES

This is one of those "passing the baton" editor's messages.

A long time ago, on my very first job out of college, I got two bits of advice from the chief copywriter. One was "always be training your successor," and the other was "good managers always hire people better than themselves."

Consequently, I tried to take that advice and went out and hired two fine writers, Carlotta Collette and Steve Engel, both of whose work has frequently appeared in this magazine. Now they will do more than write.

I am extremely pleased to announce that, with this issue, Carlotta is taking over as editor-in-chief of *Energy News.* Steve will be special projects editor (special projects being such things as the Council's power plan and fish and wildlife program).

While Carlotta and Steve will take the lead in their areas, all of us in the public information division will continue to write for all of the various publications. The individual state public information directors will also continue as contributors.

The change will allow me more time to work with the region's media and in the public involvement area. Ruth Curtis and Jim Nybo will play important roles in expanding these services.

–Dulcy Mahar

Editor's notes, too...

In this issue of *Energy News* we introduce a new section to help keep our readers up to date on the Council's long and complex fish and wildlife program goals study. Two additional stories — one on the question of how many fish were lost, and one resident fish substitutions for those areas where hydroelectric dams block passage for salmon and steelhead — accompany the new column.

As we went to press, the Council was considering a staff proposal of ways to achieve the model conservation standards regionwide. The proposal, open for public comment through October 23, incorporates new information brought forward during an earlier comment period on a previous set of recommendations. The current proposal wouldn't alter the standards themselves, but it would change the Council's strategy and schedule for attaining them. We'll carry a summary of the Council's decided course in our next issue.

Our cover illustration, *Cycle,* is by Dennis Cunningham.

–Carlotta Collette

CALENDAR

October 30-31 — Northwest Power Planning Council meeting in Boise, Idaho.

November 6-7 — Northwest Power Planning Council meeting in Portland, Oregon.

November 13-14 — Northwest Power Planning Council meeting in Portland, Oregon.

November 20-21 — Northwest Power Planning Council meeting in Portland, Oregon.

November 20-21 — "Super Good Cents Utility Training: Selling Energy Efficiency" workshop in Spokane, Washington. Sponsored by the Northwest Public Power Association. For information: Northwest Public Power Association, P.O. Box 1307, Vancouver, Washington 98666 (206) 694-6553.

Compiled by Ruth Curtis

November 22-23 — "Department of Energy/National Bureau of Standards Energy-Related Inventions Program" seminar in Salt Lake City, Utah. For information: Office of Energy-Related Inventions, National Bureau of Standards, Building 202, Room 209, Gaithersburg, Maryland 20899 (301) 921-3694.

December 2-5 — "Thermal Performance of the Exterior Envelopes of Buildings" conference in Clearwater Beach, Florida. Cosponsored by ASHRAE and the Building Thermal Envelope Coordinating Council. For information: Marjorie C. Matthews, ORNL, Bldg 4508, Room 216, P.O. Box X, Oak Ridge, Tennessee 37830 (615) 574-4346.

December 11-12 — Northwest Power Planning Council meeting in Portland, Oregon.

Bob Saxvik

Kai Lee

Council elects Saxvik and Lee top officers

Robert W. Saxvik of Idaho was elected chairman of the Northwest Power Planning Council at the Council's annual business meeting, October 10. Saxvik succeeds Charles T. Collins of Washington. Kai N. Lee, from Washington, was named vice chairman.

Saxvik, appointed to the Council by Governor John Evans in 1981, will steer the eight-member group during its finalization of the new 20-year electrical power plan for the region. "The 1985 Power Plan starts the wheels in motion on an extremely important issue — better, more efficient use of the hydropower system," Saxvik said in remarks following his election.

"With the Council as regional policy-maker, the plan calls for regional cooperation among private and public utilities, with Bonneville serving as facilitator," he said. He emphasized the importance of regional cooperation to the success of Council efforts, including developing goals to restore fish and wildlife in the Columbia River Basin.

He added, "The Council will continue its tradition of strong technical analysis and we will work closely with the ratepayers, tribes, state and local governments, shelter industries, utilities and others to translate that knowledge into workable public policy."

Saxvik was chief of staff for Governor Evans from 1978 to 1981 and his legislative liaison from 1977 to 1978. He served three terms in the Idaho State Senate where he was assistant senate minority leader. For 16 years, Saxvik was vice president and general manager of KBAR Radio in Burley, Idaho. He is past president of the Burley Chamber of Commerce, Rotary Club and the Idaho State Broadcasters Association. He served in the U.S. Air Force for four years as a bomber crew member in the Strategic Air Command. Saxvik earned his Bachelor of Arts degree in education at Western Washington State College.

Kai Lee is an associate professor of environmental studies and political science at the University of Washington. He is also an adjunct faculty member at the Institute of Marine Studies. He serves on the Board of Radioactive Waste Management at the National Academy of Science. From 1976 to 1977 he served as a White House Fellow to the Secretary of Defense. Lee has a degree in physics from Columbia University and a Ph.D. from Princeton University. *—Beth Heinrich*

Steve Engel/Linda Sullivan photos

IN THE NEWS
continued

Collins, Hemmingway to leave Council

Roy Hemmingway

Chuck Collins

Judith Rafferty photos

Two members of the Northwest Power Planning Council have announced their resignations. Washington's Chuck Collins and Oregon's Roy Hemmingway, members of the Council since its creation in 1981, both cited the desire for personal growth as the major factor in their decisions.

Collins, who had served as Council chairman this past year, expects to leave in January to assume a new position. Washington Governor Booth Gardner has asked Collins to chair the State Board of Higher Education.

In a letter to Oregon Governor Vic Atiyeh, Hemmingway cited his ten years of public service, primarily in the energy field, saying it was time to return to private life. Hemmingway was one of the principal authors of the Northwest Power Act which authorized the Council. While his term of appointment officially ends in January, he has told the Governor he will serve until his replacement is confirmed.

"It's a little bit like losing two institutions at once," the Council's Executive Director Edward Sheets said. "While we recognize their need to move on, we will feel their loss deeply. Both have made invaluable contributions not just to the Council, but to the entire Northwest power community. Mr. Collins and Mr. Hemmingway are widely respected for their leadership and their incisive minds. It's been an extraordinary combination."

Collins is a businessman and president of Colsper Corporation, a company involved in solid waste disposal. He has an extensive background in both the private and public sector. In addition to his own business activities, he has served as director of Seattle's Metro Transit System and as chief administrative officer for King County in Washington.

Under his stewardship as chairman, the Council has tackled some major issues as it developed its Draft 1985 Power Plan. Those issues ranged from the futures of two unfinished nuclear plants to power sales to California. He personally worked to involve more people in developing the plan, particularly the region's public utility commissioners. A driving theme of his administration has been his effort to build cooperation among power entities.

"A major task will be rebuilding the regional institutions and framework for cooperation destroyed by litigation and rapid rate escalations," he told the Council as work on the new plan began.

Hemmingway, a lawyer, began his public service in 1976 as assistant to Oregon Governor Bob Straub. He was a key figure in writing the state's Domestic and Rural Power Authority Act. Later, as Deputy Public Utility Commissioner, he played a leading role in drafting and lobbying for the Northwest Power Act.

Speaking of that Act, he said, "Northwest ratepayers now have a clear voice in determining their own energy future. The Northwest Power Planning Council represents the region's determination that its crucial electric energy decisions will be made here, in the Northwest, and with full public participation. The creation of the Council by the Northwest states is the first real effort by states anywhere to take back from the federal government critical authority over their futures." *–DM*

Northwest gets its own regional FERC office

The Federal Energy Regulatory Commission (FERC), which licenses and regulates nonfederal hydroelectric projects in the U.S., saw the lion's share of its work looming in the Northwest, and decided to open a regional office in Portland, Oregon. The office opened November 1.

Commission Chairman Raymond J. O'Conner, in announcing the FERC decision, noted that the Northwest office is "essential," due in large part to the amount of hydropower-related activity taking place in the region. The new office will take over facilities inspections in the region and assist in the assessment of the impacts of clustering dams in the Salmon and Snohomish river basins and elsewhere in the region.

The Northwest Power Planning Council had asked FERC to create a Northwest office. Without such a base, FERC service to the Columbia River Basin is split among three regional offices in Illinois, Texas and California, none of which carries an emphasis on the environmental concerns hydroelectric development poses for this region.

"FERC was the only major implementor of the Columbia River Basin Fish and Wildlife Program that did not have an office in the region," explained Edward Sheets, executive director of the Council. "We are very pleased with its new plans."

Sheets added that, "The Commission will be better able to evaluate the potential effects of its actions when it has a field operation located within the region. FERC's proximity to the Council, the fisheries agencies, Indian tribes and project operators will build much better communication among all of us."

Oregon's Senator Mark Hatfield and Representative Ron Wyden had also pressed for the move. Representative Wyden stated that he hoped the new FERC presence would provide "much more expeditious treatment" of hydropower license applications on hold in the area.

FERC has selected Quentin A. Edson, a former Northwesterner, fisheries biologist and director of FERC's Office of Hydropower Licensing, to head the new office. Edson will report directly to the Executive Director of FERC, William McDonald. *–CC*

Seattle's code new approach to MCS

"We think it will qualify as an alternative code that meets the model conservation standards," said Seattle City Light Superintendent Randy Hardy. He was speaking of the new building code adopted September 30 by Seattle's city council.

Hardy said the new code omits some residential measures called for in the standards, but places more stringent requirements on commercial buildings. He believes the code, which goes into effect January 1986, will save ratepayers of the region's largest municipal utility "around $140 million. That's how much we're spending on the Lucky Peak hydro project to get 35 megawatts. During the next 20 years, we expect to gain between 35 and 40 megawatts through the code."

According to Seattle City Light policy analyst Sara Patton, high rise buildings in Seattle will have to perform better than the model conservation standards (MCS).

Since 1983, Seattle has required new buildings larger than 50,000 square feet to save 10 percent more than required by the city's commercial code, "which is almost identical to the MCS," Patton said.

"Most of our new construction will be commercial, rather than homes. That's why we expect to save as much or more than if we applied the standards in the conventional manner."

The Seattle code doesn't require heat-recovery ventilating systems or continuous vapor barriers in new homes, Patton said. "But it does improve the thermal performance of walls, ceilings, floors and windows to the MCS levels."

The Bonneville Power Administration offers financial and technical assistance to communities that adopt the model standards or their equivalent into codes ahead of the schedule set by the Northwest Power Planning Council. Hardy suggested that Bonneville will have to compare the Seattle code with the MCS to determine whether it qualifies for the assistance. *–SE*

Unique bond sale funds utility conservation

A $17 million bond sale by the Bonneville Power Administration and the Eugene Water and Electric Board (EWEB) marks the first time anywhere that such tax-exempt instruments have been used to fund conservation, according to EWEB treasurer Don Vanderzanden.

In September, after more than two years of working with Congress, the Internal Revenue Service, the Treasury Department and utility district voters to clear the way for this arrangement, Bonneville and EWEB sold the AA-rated issue to First Boston Corporation. The money will go to weatherize residences in EWEB's service area in west central Oregon.

Bonneville will acquire the energy savings from EWEB by paying debt service on the 15-year bonds. At 8.756 percent interest, said Vanderzanden, the bonds improve on Bonneville's federal borrowing rate by better than 2½ percent . "We get more conservation by the dollar this way," he said.

EWEB has arranged with Bonneville to use the $1.8 million savings for weatherizing at least one high rise multifamily structure — a type of project not currently included in Bonneville's program.

According to Vanderzanden, a provision to the 1984 Tax Reform Act, advanced by Senator Bob Packwood of Oregon, gave Bonneville "a five-year window" through 1989, which frees the agency from prohibitions against federal entities guaranteeing tax exempt bonds. *–SE*

Customers tell utility favored energy features

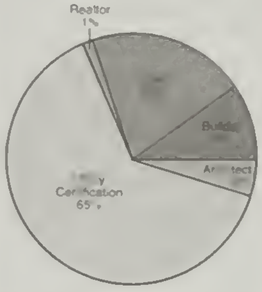
Neither patriotism nor community spirit is the reason most people favor energy efficiency in their homes. Instead, people consider the benefits to be direct savings in their heating bills and the increased comfort in their homes. These are among the conclusions of a study commissioned by the Eugene Water and Electric Board.

The survey of 400 people in Lane County, Oregon, also showed that energy related items are both the most and the least preferred features in new home construction. Insulation was chosen as the most important feature, outranking location — the traditional prime consideration of a new home. Three of the six top-ranked features dealt with energy conservation measures.

However, three of the four lowest ranked features also dealt, either directly or indirectly, with energy. While items such as insulation, extra caulking, and better quality double pane windows were popular, passive solar features and woodstoves were not.

The majority of respondents were most comfortable relying on a certification by their local electric utility to determine if a home is energy efficient. Approximately 90 percent were willing to spend additional money to get a house with that certification. And 71 percent indicated a willingness to spend over $3,000 for it. *–RC*

Sixty-five percent of the survey respondents felt most comfortable with utility certification that a house is energy efficient.



IN THE NEWS
continued

1985 fall chinook run may be one of biggest

This year's Columbia River fall chinook run could turn out to be the second or third largest since the region's hydropower dams started generating. Fish counts through October at Bonneville Dam already mark this run as the eighth highest total passage since 1938, and the big fish are still coming up the river.

Spring chinook, sockeye and steelhead runs are also up this year over recent years. As of August 29, the spring and fall chinook, sockeye and steelhead adult returns were well above the ten-year average. By the end of September, steelhead returns had already passed last year's record-breaking run. That would make this the best steelhead run since fish counts were first recorded at the dam.

Up the river at McNary Dam near Hermiston, Oregon, the fall chinook counts are 54,000 above the totals for any year since that dam was completed in 1954. All lower river fish runs, with the exception of the summer chinook, are well above the ten-year averages.

Summer chinook counts are the highest since 1980, but that seasonal run, once considered the biggest run on the river, has also been the most depleted. –CC

Oregon Dept. of Fish and Wildlife photo

Study compares homes for indoor air quality

Energy efficient homes do not trap any more air pollutants than conventional homes, according to preliminary results from a study monitoring the levels of radon and formaldehyde in houses.

The study is being done by the Bonneville Power Administration. According to Conservation Manager Steve Hickok, "We were concerned that super energy efficient homes might collect these gases because of their extremely tight construction."

He went on to say, "the study indicates that, while formaldehyde and radon may be potential public health issues, well planned energy efficient construction does not appear to increase the risk over conventionally constructed homes."

Formaldehyde is a common industrial chemical found in many building materials. Radon, a radioactive gas, is the natural decay product of radium, found in many soils.

Formaldehyde levels were measured in 530 homes throughout the Northwest. Levels averaged 0.09 parts per million (ppm) in conventionally built homes and 0.10 ppm in homes built to energy efficiency levels recommended by the Northwest Power Planning Council in the model conservation standards.

These efficient homes do not have the random, uncontrolled air leakage of a conventional home, but they are required to have some type of mechanical ventilation. This ventilation ensures a low level of pollutants, while keeping the home's heat loss to a minimum.

The fact that the energy efficient homes are not as old as the conventional homes tested (six months compared to an average of three years) probably accounts for their marginally higher formaldehyde levels. Formaldehyde levels decrease over time as the gas is released from materials in the home and eliminated.

Radon levels were measured in 289 homes. Levels averaged 1.3 picoCuries per liter (the unit used to measure the amount of radioactive material in the air) in conventional homes, and 1.4 picoCuries per liter in efficient homes. The health risk from long-term exposure to levels at 5 picoCuries per liter is roughly equivalent to a person smoking two to three cigarettes a day.

Bonneville will be sharing these findings and future results with the state energy offices and state public health agencies in Oregon, Washington, Idaho and Montana.

–RC

Columbia River Basin Fish and Wildlife Program Amendments

Recommendations for amendments to the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program will be accepted through December 16, 1985. The program, which was adopted by the Council on November 15, 1982, addresses fish and wildlife losses in the Columbia River Basin that resulted from the development and operation of hydroelectric dams in the basin.

This will be the second time the Council has amended the program. The current amendment process, like the last one, is open to Indian tribes, federal and state fish and wildlife agencies, water and land management agencies, electric power producing agencies and their customers, and members of the public.

The amendment process will include a series of consultations, public hearings throughout the region, public comment at Council meetings, opportunities to make written comment, and analysis by the Council and its staff.

All applications must be submitted on the application form developed for this purpose. Copies of the application and related materials are available from the Council. Call Janie Pearcy, Division of Fish and Wildlife, 1-800-222-3355 (Idaho, Montana and Washington), 1-800-452-2324 (Oregon), and 222-5161 for Portland, Oregon. –CC

The Great Goals Study

The Northwest's hydropower resources can hardly be over appreciated. The huge dams that have wrestled the Columbia River and its tributaries and made them productive are clearly among this region's most valuable assets. But the price paid for this productivity can also be couched in superlatives. The Northwest came terribly close to losing some of its most impressive natural resources — the fish and wildlife that also depended on the river.

The Northwest Power Act was signed into law at a time when the salmon and steelhead runs in the Columbia River Basin were on a steady decline that some felt would soon end in total annihilation. The Northwest Power Planning Council's ambitious Columbia River Basin Fish and Wildlife Program is designed to reverse this slow death through a basinwide set of over 200 measures to "protect, mitigate and enhance" the fish and wildlife resources in the basin.

But how much protecting, mitigating and enhancing will it take to settle the debt incurred by the hydroelectric system? Is such a goal even achievable? And how will the Northwest be able to determine whether the program has completed the job?

These questions were temporarily set aside when the Council sat down three years ago with state and federal fish and wildlife agencies, Indian tribes and others, to develop strategies for replenishing the dying resource. They are being asked and answered now in the complex weaving together of research, regionwide discussions and policy decisions that are known collectively as the "goals work plan."

One of the first steps in the work plan is to assess the total losses of salmon and steelhead since development came to the basin. These preliminary estimates are contained in the *Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin,* which is discussed on pages 10-13.

With this broad sense of the total loss, the hydropower caused losses must then be separated out, so ratepayers, who fund the program-related restoration, will only be paying for the effects of hydroelectric development. This second step is referred to as the "contributions issue."

With the questions of losses and contributions addressed, the Council moves into even more complex concerns that require policy decisions. Key questions must be answered: Should the program concentrate on improving the wild and natural salmon and steelhead runs or on increasing hatchery production? What should the program do about areas where salmon and steelhead are locked out of their spawning and rearing habitat by impassable dams, such as Grand Coulee and Hells Canyon?

Ultimately, the goals process will provide a standard against which program measures can be compared and progress, or the lack of it, can be evaluated.

The chart on page 9 explains the different parts of the study and how they all fit together. In addition, the following two articles cover major parts of the goals work plan in more detail. This article is the first in a series that will regularly track and report on the progress of the Council, its staff, and the goals process advisory committees. –CC

Dennis Cunningham illustration

The Goals Process

by Ruth Curtis

1. LOSSES AND CONTRIBUTIONS

This portion of the goals process deals with gathering baseline data to estimate the amount salmon and steelhead runs have declined and hydropower's contribution to those losses.

A preliminary compilation of the numbers of fish lost was released in September for public comment. (See related story on page 10.) After consultations with fish and wildlife agencies, Indian tribes and other interested parties, a revised version will be presented to the Council for approval at the November 20 Council meeting.

These losses were caused by many factors, such as irrigation, logging, and commercial fishing, in addition to the development of the hydroelectric dams. To establish the scope of the Council's program, the relative contribution of hydropower must be determined. A paper discussing these relative contributions will be distributed for public comment in November. To order a copy, see back cover of this issue.

2. POLICY DECISIONS

System Planning Principles

If the goals process is to work, all major groups and agencies involved must have a clear understanding of the basinwide goals framework. To ensure this, a discussion paper was distributed last summer which described the principles to be used throughout the goals process.

These principles include the following concepts:

- Planning will emphasize a systemwide approach to the ecosystem in which salmon and steelhead exist.
- Offsite enhancement will be used in appropriate circumstances to meet the program's goals and objectives.
- Planning will emphasize protection, mitigation and enhancement of fish and wildlife affected by hydroelectric projects in upriver areas. (Previous efforts have focused on the lower Columbia River.)
- Planning will promote complementary activities by all entities affecting Columbia River fish stocks.
- The flexibility in coordinated hydropower operations will be used to achieve the program's goals and objectives.

Production Investments

Several approaches to fish production could be used to increase the numbers of salmon in the Northwest. They range from increasing wild, self-sustaining fish stocks to various types of hatchery production. The Council is evaluating these methods to determine which approach should be used in the goals process and to what degree.

After public comment on a paper dealing with these production approaches, the Council decided that more discussion of the issues and more technical analysis are needed before a decision can be made on how to invest in production.

Resident Fish Substitutions

A large portion of the basin is now blocked to migrating salmon and steelhead by hydroelectric projects. While these stocks of fish can never return to these areas, resident fish (fish that do not migrate to the ocean, such as rainbow trout) could be used to replace the original fish.

In August, the Council tackled the issue of whether these types of substitutions should be considered and, if so, where and to what extent. After hearing from various parties, the Council decided such substitutions should indeed be considered and developed guidelines for evaluating proposed projects. The areas above Chief Joseph/Grand Coulee dams on the Columbia, and Hells Canyon Dam on the Snake River were named priority areas. (See related story on page 14.)

Accounting and Modeling

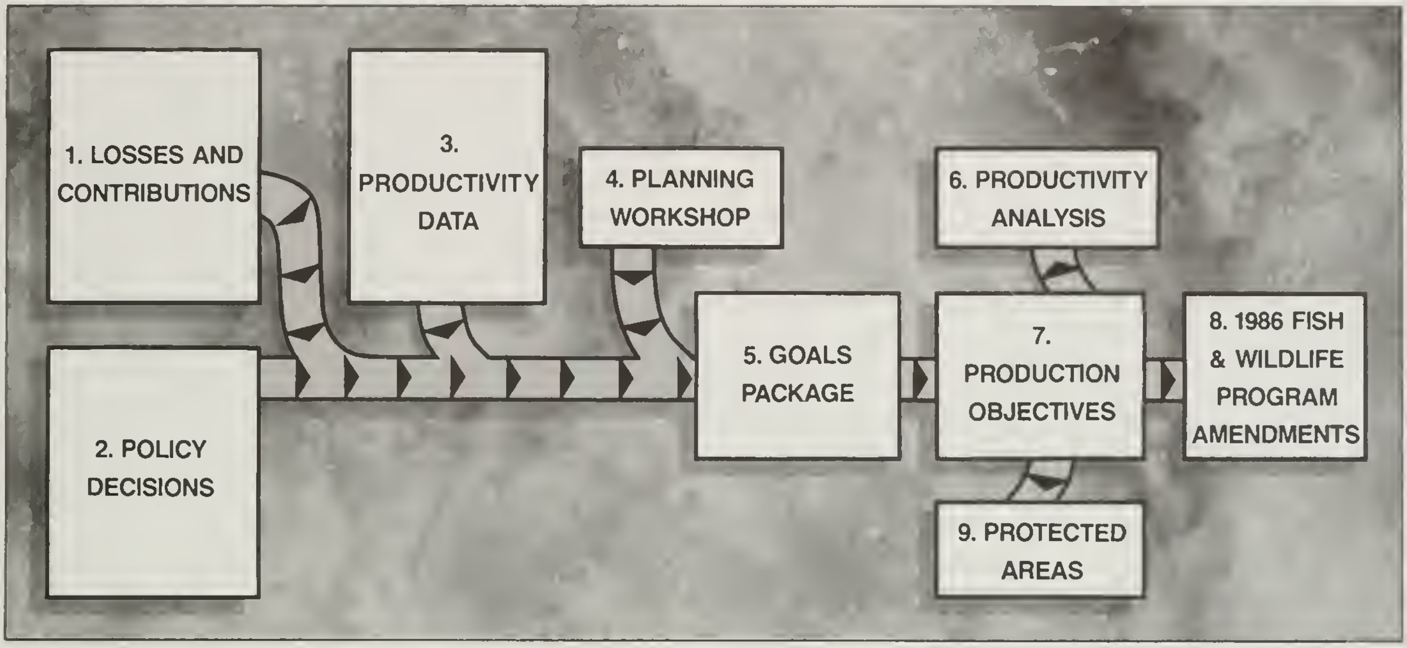
An accounting and modeling discussion paper sparked a dialogue in the region this summer regarding the Council's possible use of computer modeling to help fisheries biologists study alternative management plans and their possible results. A systemwide simulation model would describe the life of Columbia River Basin salmon or steelhead in terms of the events that influence their survival. These events would be formulated mathematically and linked so that the survival odds of the fish could be estimated.

A technical work group will assist the Council in developing the model. The group will be formed this winter and will consist of representative Columbia Basin fisheries experts.

3. PRODUCTIVITY DATA

Salmon and Steelhead Database

Using methods decided upon in September, the Council is collecting all available information on various indicators of existing salmon and steelhead productivity and habitat as well as estimates of the maximum potential production of these fish in Northwest streams and rivers. This information is being compiled in a computerized database. It is used for a variety of tasks, including setting priorities among the different geographic areas in the Northwest and among fish stocks to be produced. It will also be used in programs the Council has underway to protect certain sensitive areas from future hydroelectric development.



Resident Fish Substitution Productivity Information Test Area

Information on resident fish productivity is being gathered for the area above the Chief Joseph Dam on the upper Columbia River. This test area was chosen because: 1) the information for this area is readily available; 2) a wide range of resident fish habitat types are found there; and 3) the Council has designated this a high priority area for resident fish substitutions.

With the information gathered in the test area, the Council will be able to assess whether resident fish substitution projects are appropriate in that area and, if so, where they should occur and what production targets should be set. The test area will also provide guidance for determining the type of information that should be gathered for the other blocked areas.

A report on this work will be available in early winter.

4. PLANNING WORKSHOP

Experts from fish and wildlife agencies, Indian tribes and power interests will gather in early December to use the productivity data to do a trial run in developing production objectives. This planning workshop is designed to develop a procedure for determining salmon and steelhead productivity objectives. The experience gained will help the Council set production objectives throughout the region.

5. GOALS PACKAGE

All of the information provided by these activities will be combined into a Draft Goals Package to be distributed for public comment in early 1986. The package will include preliminary long-term goals for the fish and wildlife program, as well as the responsibilities of the different parties involved in meeting those goals, and the procedures to be used for measuring progress.

After a public review and comment period, the Council is scheduled to adopt the final goals package in March 1986.

6. PRODUCTIVITY ANALYSIS

The Council, through various analysis methods (some of which are currently being developed by the region's fish and wildlife agencies and Indian tribes), will develop information on the existing and potential salmon and steelhead productivity of the Columbia River Basin. These methods were discussed in an issue paper released in the late summer.

7. PRODUCTION OBJECTIVES

Once the goals package is agreed upon, the Council will use the goals and productivity information to develop production objectives. Experience gained in the planning workshop will help the Council frame these short-term objectives to deal with individual streams or river basins. Taken together, these objectives will meet the overall goals of the fish and wildlife program.

8. 1986 FISH AND WILDLIFE PROGRAM AMENDMENTS

The production objectives will be used to evaluate the proposals the Council receives in the 1986 amendment process for the Columbia River Basin Fish and Wildlife Program. (See box, page 6.)

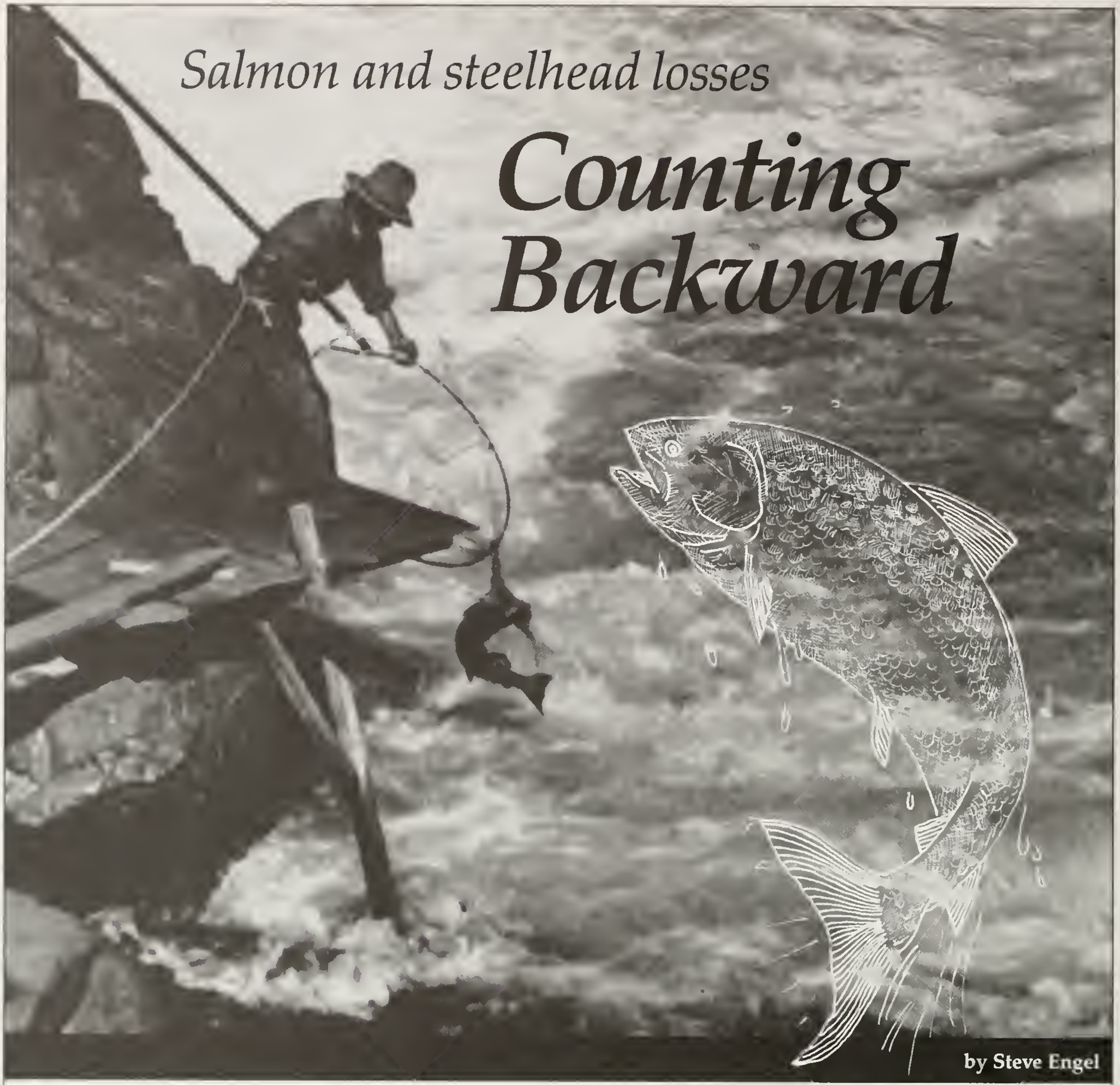
9. PROTECTED AREAS

The production objectives will also be used to influence another ongoing study that is designed to help identify areas in the basin and elsewhere in the region that should be protected from hydroelectric development.

Salmon and steelhead losses

Counting Backward

by Steve Engel



Oregon Historical Society photo (Negative #45451)

It's a bit like counting ghosts.

Before 1850, before modern developments began to take their toll, how many salmon and steelhead returned each year from seagoing lives to spawn in the streams that fill the Columbia River?

The answer will help determine how many of these fish are replaced, and where, through a program decreed by Congress. The Northwest Power Planning Council will set goals for that program and, working with fish and wildlife agencies and Indian tribes, will design methods to achieve those goals. (See story on goals process, page 7.)

Although Congress tied the scope of the Council's program to losses caused by "the development, operation, and management" of hydroelectric facilities in the basin, the Council must first learn the total extent of salmon and steelhead losses. It must find out which species have been reduced, in what numbers, and from what areas. It will also consider the damages caused by activities other than hydroelectric projects.

"Hydropower ratepayers will not be expected to compensate for fish and habitat losses caused by other factors," says Council Executive Director Edward Sheets.

As a first step in the goals-setting process, Council staff and contractors recently produced the *Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin.* This 350-page document draws together the work of many experts and agencies to arrive at estimates of the resource's current size, as well as the abundance of the various species in recent history and ancient times. (See box, "More than one way.")

This compendium does not apportion blame for the losses. Nor does it suggest what is to be done or how to do it. Those questions will be settled at a later stage. The purpose of the *Draft Compilation* is to gather and present data.

Trying to grasp the numbers of fish in a seasonal run, whether now or long ago, can become a slippery task — like taking hold of one live, surging, slick salmon. Public comment on the document, which ended October 11, brought new information on fish counts in some tributary rivers, and suggestions about ways to interpret ocean harvest figures and habitat surveys.

Yearly records since 1866 estimate how many salmon and steelhead were caught in the river or the ocean or packed at canneries. Since 1938, counts of adult fish heading upstream at Bonneville Dam give a rough idea of how many fish originating in the eastern reaches of the basin have eluded ocean trawlers and lower Columbia River commercial and sport fishers.

Adding the number harvested and the number of spawners tabulated at the dams gives a conservative estimate of fish run size. Estimates place the present annual run for all salmon and steelhead species at about 2.5 million fish. This number represents near-decimation — one-tenth the number — from some estimates of the annual run prior to major developments (since 1850).

The modern record (see Figure, "Total In-River Catch – All Species") shows the up-and-down results of many events, including natural cycles, fishing activity, and laws that limit fishing seasons or methods. The line plummets sharply following development of large dams on the Columbia River and its major tributaries. The bulk of this development took place after 1938.

The Council's draft study shows major losses of salmon and steelhead runs and habitat in the upper Columbia River and upper Snake River areas. These once-productive breeding grounds are now blocked to any returning fish by large dams — the Hells Canyon, Chief Joseph and Grand Coulee. (See related story, page 14.)

But where did the numbers start? Even 150 years ago, how many salmon and steelhead were nurtured in the 160,000 square miles of fish habitat that once made up the Columbia River Basin? How many miles of productive habitat have been lost? Is it possible to know the size of migrations:

...before the dams blocked the return of these fish to their ancestral gravels?

...before the spawning gravels were silted up by the effects of logging, irrigation and streamside grazing?

...before the stream-shading vegetation was torn away, allowing waters to heat up beyond levels that kill eggs and smolts?

...before irrigation and the thirst of cities drained streambeds dry?

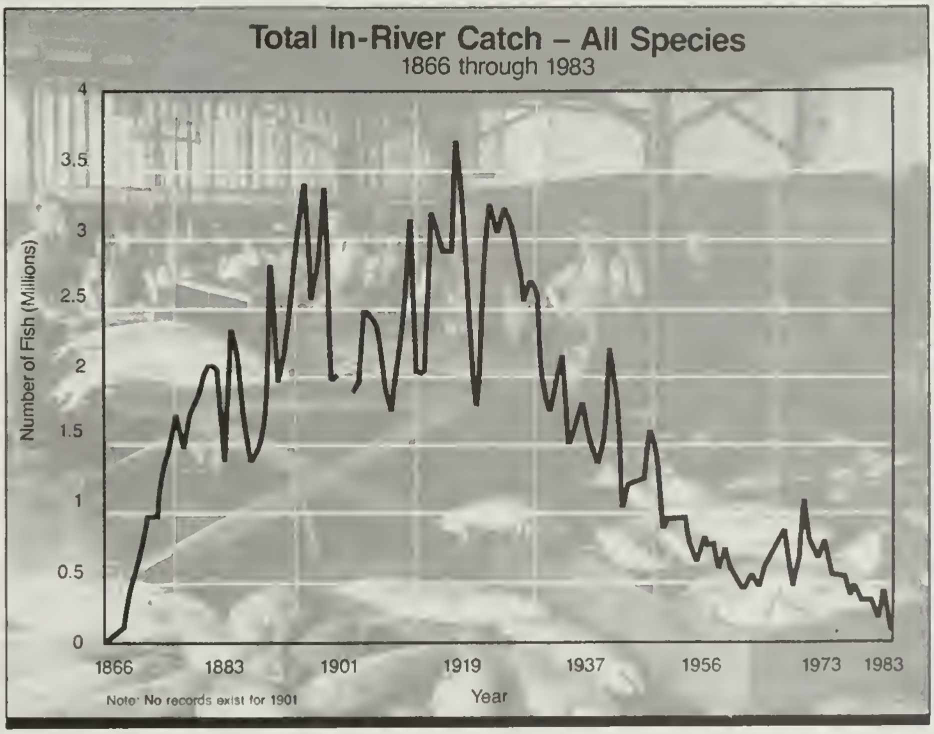
...before the waters were fouled with sewage and industrial effluent, and acid discharges from mining?

...before the smolts were held past their migration period in reservoirs, or destroyed by turbine blades, or plunged into the pressurized depths at the base of dams, where, stunned, they make easy prey?

We know a great deal, it turns out.

We know what species existed before the major developments, and have a good idea to which river basins they returned. These things are not believed to have changed until the advent of logging, irrigation and the building of dams. We also know what conditions are required for spawning these fish and sustaining them to maturity.

In 1979 the Pacific Fishery Management Council (PFMC) surveyed all river systems in the Columbia River Basin (as well



Oregon Historical Society photo (Negative #17193) as the rest of the West Coast). Based on the observed productivity of stream reaches with the required slope, gravel content and water level, and the total area of such habitats, the PFMC estimated that the basin originally supported an annual run of about 8 million fish.

"This is an extremely conservative estimate," says John Marsh, project manager of the Council's losses study. "Presented with a number of different stream habitat assessments, the PFMC study chose the lowest estimate in every case."

The PFMC study estimates that modern developments have destroyed or blocked more than half of the potential breeding habitat in the basin — leaving 72,800 square miles of the 163,000 square miles considered available prior to 1850.

A larger estimate of the basin's former abundance of salmon and steelhead was arrived at by adding together the largest annual recorded catches for each species. These bumper years were achieved by commercial gillnetters in the lower Columbia River during the late 19th and early 20th centuries. The total maximum catch was 8 million fish. Estimates of catch efficiency (percent of the run actually landed) vary from half to two-thirds; hence, the prehistoric run is calculated to be either 12 million or 16 million.

To check the reasonableness of these figures, the Council study estimated the aboriginal consumption of salmon. From the wet, green west to the dry, brown east, and even up into the high plains, subsistence fishing in the Columbia River Basin supported a large portion of the human population prior to white settlement. It has been called the most productive aboriginal fishery in the world.

The remarkable wealth, complexity and culture of the societies that grew up were based on a large, reliable, year-round food source.

The artifacts and religious practices of the tribes in the Basin, as well as historical and present accounts, point to the fish runs.

Early explorers and traders reported the seasonal food-gathering activities of the people they saw. These accounts tell the

CHINOOK SALMON *Onc rhy awytscha*

COHO SALMON *us kisutch*

STEELHEAD TROUT *S mo gairdneri*

SOCKEYE SALMON (spawning) *hus nerka*

Sharon Torvik illustrations

degree to which different tribes relied on the various salmon and steelhead migrations. They also give village locations and population estimates. Independent analyses of these early reports place the aboriginal population of the basin at 50,000 — although recent work cited during the public comment period would increase that figure. These written accounts can be compared with each other and with what elderly Indians told anthropologists in the early 1900s.

The *Draft Compilation* estimates aboriginal consumption of salmon and steelhead at about 3 million fish, totaling 42 million pounds. Comments received by the Council could increase these numbers. This estimate considers the tribal populations and the extent of their dependence on the salmon. It even calculates the number of calories the fish lost per mile over the distance they traveled from the mouth of the Columbia to each tribal territory.

Salmon and steelhead use is not documented for all streams and native populations in the basin. At some places, such as Shoshone Falls on the Snake River in Idaho, natural barriers blocked the migrations. Even so, the people who lived above those places often relied on the salmon; they traded for it, or traveled to favorable fishing spots.

They would spear or net the fat, pink-fleshed salmon. They would smoke the fish over alder fires, or dry them in the parching air — enough to feed every man, woman and child a pound a day through the cold, grey months to come.

New diseases and new ways swallowed most of the Indians — and most of the salmon. To the white society, the salmon became a moneymaking proposition, then a disappearing resource, and finally a legal and moral — and scientific — problem.

The riddle of the salmon ghosts has an answer now that is reasonably accurate, but broad. According to the *Draft Compilation*, there were 8.3 to 16.3 million salmon and steelhead in the river of old. There are about 2.5 million now. The loss stands somewhere between 5.8 million and 13.8 million. Some people will argue for a higher count, and some for a lower one. Much debate is sure to attend the determination of causes. The Council, says its former chairman, Chuck Collins, "will make an equity judgment."

The salmon, as they always have, and without comment, will seek the sea, and then the shallow waters of their beginning. ■

Oregon Historical Society photo (Negative #70780)

More than one way…

The *Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin* assembles 120 years worth of records of sport and commercial catches, cannery output, and dam counts. It uses this data, along with surveys of suitable and spoiled spawning gravels, to estimate the size of past fish runs. It also gathers together what is known about Indian use of the fish resource before 1850, based on archaeological studies and the accounts of explorers, traders, and Indians who lived through those times.

This document provides year-by-year measures of non-fishing activities that have affected the abundance of salmon and steelhead. These records include logging and mining production, irrigated acreage and related water diversion, grazing intensity, manufacturing employment and human population growth. The document charts cumulative storage capacity and cumulative power output for all dams in the basin, since these factors may correlate with fish run sizes and habitat destruction.

Other sections describe activities that have helped restore fish populations, including hatchery releases, protective laws, efforts to clean up the environment, and programs to increase the numbers of young and adult fish surviving dam passage.

SUBSTITUTIONS FOR STOPPED FISH

by Carlotta Collette

Some of the most difficult questions facing the Northwest Power Planning Council involve blocked areas – those parts of the Columbia River Basin where salmon and steelhead are locked out of spawning and rearing habitat by impassable dams. In two of these cases, the Council has adopted a preliminary policy for substituting resident fish, which do not migrate to the ocean, for those salmon and steelhead lost due to the hydropower blockage.

In the Council's decision, the blocked areas above the Chief Joseph/Grand Coulee dams on the upper Columbia River and Hells Canyon Dam on the Snake River will receive priority attention because the losses in those areas were so great. Resident fish released into the lakes and streams above these dams will benefit the people whose economies and lifestyles depended on the fish. These people have received very little compensation for their loss.

Resident fish substitutions in lower river blocked areas will be reconsidered when the current program's effectiveness in restoring salmon and steelhead runs and developing resident fish populations can be measured, and specific goals can be set for any necessary additional substitutions.

In its 1984 amendment process, the Council set the precedent for such substitutions by approving the Colville Confederated Tribes' application for a resident trout hatchery to be built near Chief Joseph Dam on the Colville reservation border.

Martin Louie sits full face to the sun, his lap covered with an old blanket. Beside him rests an older pipe. Martin Louie is older still than the blanket and pipe. He is old enough to remember fishing at the Kettle Falls before they were buried by the slow-rising water behind Grand Coulee Dam. He is old enough to remember going for berries in the hills he gestures at over his shoulder. When he was younger he hunted for deer there. He is a Kettle River Indian tribal elder, living in the town of Inchelium, Washington, where three of the creeks that drain the east face of the Kettle River Range pour into the huge reservoir that now borders his reservation on the east and to the south.

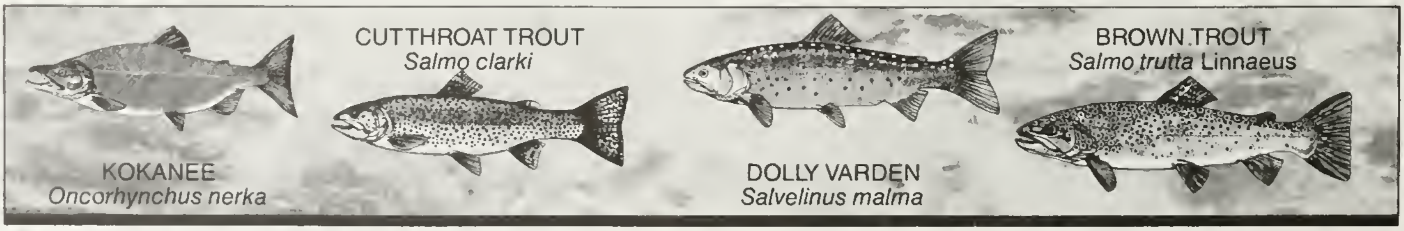
A young video crew has approached Martin Louie to have him tell the story of how the salmon came to be in the upper Columbia River and its tributaries. The story is about Coyote, part prankster, part wizard, who nudged evolution in many traditional Indian legends. In this tale, Coyote hauled the salmon upriver after first tricking four women guardians at Celilo, and digging a channel in the earthen dam the women used to keep the salmon in the lower Columbia.

In Louie's Coyote story, the wily spirit then delivered salmon to the mouth of the Wenatchee, to the Okanogan and the Spokane, up Hard Creek, and into the Colville River. At the old site of Kettle Falls, he piled up rocks to hold the fish in and, in that manner, built the two-stepped falls that used to cascade first 15 and then ten more feet in their separate drops.

This must have occurred a long, long time ago, because as old as records get in the upper Columbia, there have been salmon there, and Martin Louie's ancestors caught them in abundance.

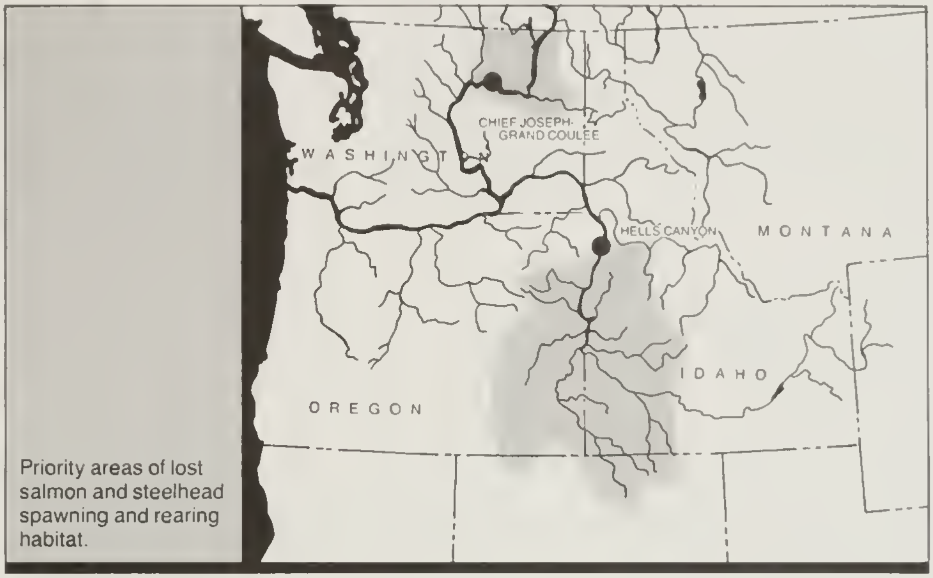
Most of the Indian tribes, spread out on the wooded and hilly landscape before the dams closed out the upper Columbia, relied on the summer salmon runs for their subsistence. At Kettle Falls, the preferred fishing site of the Colville tribe, an 1841 report describes the not unusual taking of 900 salmon in a day and a night. Given the duration of the summer salmon runs (about 60 days), and an average haul of 500 fish per day, the annual Indian catch at Kettle Falls alone would have been about 600,000 pounds of fish.

When the river was high enough, the salmon could travel over the falls and on into the lands occupied by the Spokan, the Lakes and the Kutenai tribes. The salmon appear to have spawned in the



Sharon Torvik illustrations

Columbia Basin nearly all the way to the river's source in Lake Columbia, some 1,300 miles from the sea. When the Bureau of Reclamation built Grand Coulee Dam 596 river miles up from the estuary at Astoria, they stopped those ancient salmon runs dead.



Priority areas of lost salmon and steelhead spawning and rearing habitat.

Grand Coulee Dam doesn't seem all that imposing at first glance. Mainstem dams on the Columbia River are huge by almost any standards, but Coulee doesn't look that much bigger or taller than some others. It helps one's perspective to catch a glimpse of a truck racing across the top of it. The truck seems antlike, and the dam, in contrast, looms high and wide around it. Or see it come grey and view-filling out of the dark at sunrise. It is big and almost ominous then, a rumbling concrete wall nearly a mile across and 350 feet above the water level on the downstream side.

It was noted, in the 1930s when the dam was built, that the Bureau's engineers poured enough concrete in it to build two 20-foot highways from the Atlantic to the Pacific oceans. Franklin Delano Roosevelt Lake, the reservoir behind the dam, covers 82,300 acres, runs to 151 miles and has a 600 mile shoreline. There's enough water in it to give every person in this country about 20,000 gallons each. But no salmon go there or beyond it to spawn anymore, and it would take a major miracle for even Coyote to carve a fish passage through that massive rock.

The similar construction of Hells Canyon Dam across the Snake River, between the steep cliffs that separate Oregon and Idaho, cut off about half of the Snake River Basin from salmon and steelhead runs. Hydropower dams have also blocked stream passage for anadromous fish in more than a dozen other tributaries of the Columbia.

Such barriers reduce the basin's total available spawning and rearing habitat for salmon and steelhead, by about half. This loss in habitat has almost certainly contributed to basinwide losses in numbers and even stocks of salmonids. The most notorious loss is the extinction of the oversized salmon known as the "June hogs." These fish once climbed the river almost to its source. Cut off now by the wall at Grand Coulee, they have been completely eliminated from the river.

The blocked areas above dams like Grand Coulee and Hells Canyon will never again sustain runs of anadromous fish. The people who live in the vicinity of these blocked areas will not catch the big silver fish at their historic fishing sites, and they have yet to be fully compensated for their loss.

The Northwest Power Act called for replacement of fish "in kind and in place." But the Council concluded that, in some cases where anadromous fish cannot be supported, fish that do not require an ocean migration — resident fish — may be substituted.

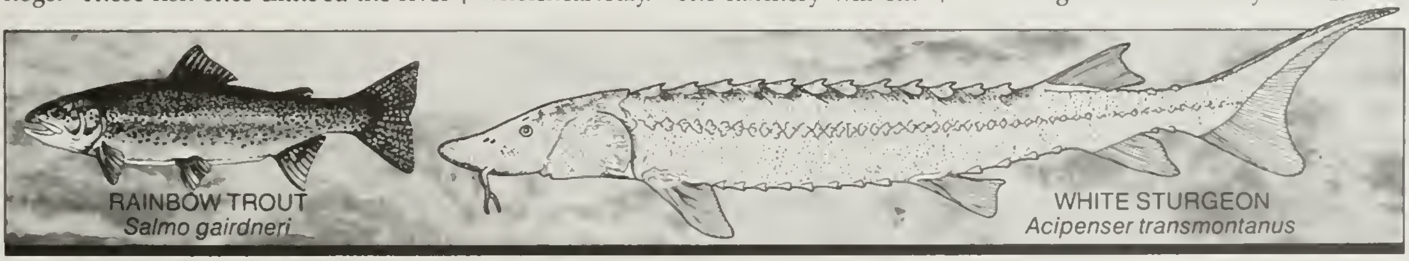
This will be the case on Martin Louie's reservation, where a resident trout hatchery is in the design stages. The hatchery will likely aid the local economy in a corner of Washington that has only recently been seen by developers as "promising."

To John Smith, director of the Colville Confederated Tribes' Fish and Wildlife Department, developers finally "discovering" the beauty in and surrounding his reservation is a mixed blessing. But the Colville Trout Hatchery is welcomed wholeheartedly. "The hatchery will employ a lot of people here as well as provide needed food for the tribes. The additional fish will also attract sport fishermen to our area."

Hatcheries to compensate for the losses at Grand Coulee Dam are not a new idea. Federal and state agencies were already concerned about the preservation of the fisheries resource at the time the dam was built. Expected difficulties culling spawning fish from the turbulent tailrace at Grand Coulee precluded building a hatchery close to that project site.

Instead, four hatcheries were built on other river drainages: three federal hatcheries below the dam (on the Wenatchee, Entiat and Methow rivers), and one Washington State hatchery for resident fish above Grand Coulee. The Colville Tribes feel that none of these provided adequate compensation to the tribes or their reservation.

The new hatchery is expected to supply about four million young trout for seeding a portion of the reservation's 358 lakes and hundreds of miles of streams. Hatchery design proposals are now under review by the tribe, the Bonneville Power Administration, which is funding the hatchery, and the Council. If all goes according to schedule, the Colville tribe will be raising resident trout by 1988. ■



Sharon Torvik Illustrations

HOW MUCH CHANGE IN TWO YEARS?

A comparison of the 1983 Power Plan and the Draft 1985 Power Plan

The Northwest Power Planning Council has carefully avoided the word "amendment" throughout development of its Draft 1985 Power Plan. The term "amendment" suggested mere revisions to the existing 1983 plan. It did not, the Council felt, accurately reflect the major new analysis and substantive changes that went into the new draft.

True, the draft does not depart from the basic planning philosophies introduced in 1983. But if this planning perspective is essentially the same, the treatment of some significant issues is not — particularly the amounts and types of resources called for in the new resource portfolio.

Many of the changes in the 1985 draft are simply the result of having both better information and better ways to analyze information. A great deal of finetuning was possible because of more data on the cost and performance of resources and more sophisticated computer analysis.

New trends since 1983

Some differences between the plans respond to changing Northwest conditions and trends. At the forefront of these changes is the fact that the current electrical power surplus has turned out to be more expensive and is likely to last longer than anticipated in 1983. The Northwest's economic growth has lagged behind that of the rest of the nation. This slower recovery has meant lower growth in electrical demand.

In particular, the region's traditional industries such as forest products and heavy manufacturing, which rely heavily on electricity, have remained stagnant. The rapid growth has been in the high technology and service industries, which use relatively little electricity.

It has also become apparent since 1983 that the distribution of the electricity surplus is markedly uneven — with public utilities tending to have a long-term surplus, while some investor-owned utilities may need new resources in the very near future.

A fragmented region

At the same time, the region has moved toward greater decentralization, with the Bonneville Power Administration and its public utility customers moving in one direction and those investor-owned utilities with growing resource needs moving in a variety of other directions.

When the 1983 plan was adopted, the Council assumed that Bonneville would take the lead for the entire region in acquiring new resources. But, in fact, Bonneville now serves less than half of the region, primarily public utilities and direct service industries.

The 1985 draft calls for Bonneville to take a stronger regional role and to develop a predictable, low-cost rate for power from new resources. Otherwise, some investor-owned utilities may choose to develop expensive new generating resources rather than risk uncertain rates by turning to Bonneville. The current draft also calls for a coordinated approach to resource acquisition for all utilities.

In particular, the draft emphasizes sharing resources such as conservation and hydropower made available by strategies to make better use of the system. It also calls for developing mechanisms to allocate costs, so that resources and resource options could be shared. A central focus of the new draft is making conservation in surplus utility areas — conservation that might otherwise go undeveloped — available to those utilities with growing electrical demand.

Major uncertainties increase

In addition to these changes, some uncertainties have increased dramatically since 1983. The 1985 draft deals at length with their effects. The most dominant uncertainties center on the future of the direct service industries, the future of two partially completed nuclear plants, and the future of power sales and purchases outside the region. The direct service industries, primarily aluminum plants, are so called because they buy power directly from Bonneville.

Because of a depressed world aluminum market, there is a question about whether any or all of these companies will be around at the end of the Council's 20-year planning period. The question is significant because these industries use 15 percent of the region's electrical power. Their continued stay in the Northwest could make the difference between whether or not two unfinished nuclear plants would be cost effective to complete.

The 1983 plan assumed that Washington Public Power Supply System Nuclear Projects (WNP) 1, 2, and 3 would be completed. Based on this assumption, the plants were included in the 1983 planning base as resources to be available soon. Only WNP-2 was completed. Because of legal and financial barriers which jeopardize the completion of WNP-1 and 3, the Council chose not to include the plants, which represent 1,600 megawatts, in the portfolio of new resources for the 1985 draft.

The Council did, however, recommend maintaining the plants as potential options and working to remove the barriers to the plants' completion because they would be cost effective if the power is needed.

New ways of looking at hydro

Another resource that has diminished in size between the 1983 plan and the current draft is hydropower. The 1983 plan called for 920 megawatts of new hydropower in the high forecast. The 1985 draft considers only 255 megawatts available. This amount represents only potential hydropower from existing sites (through upgrades). No hydropower from new sites will be considered until

by Dulcy Mahar

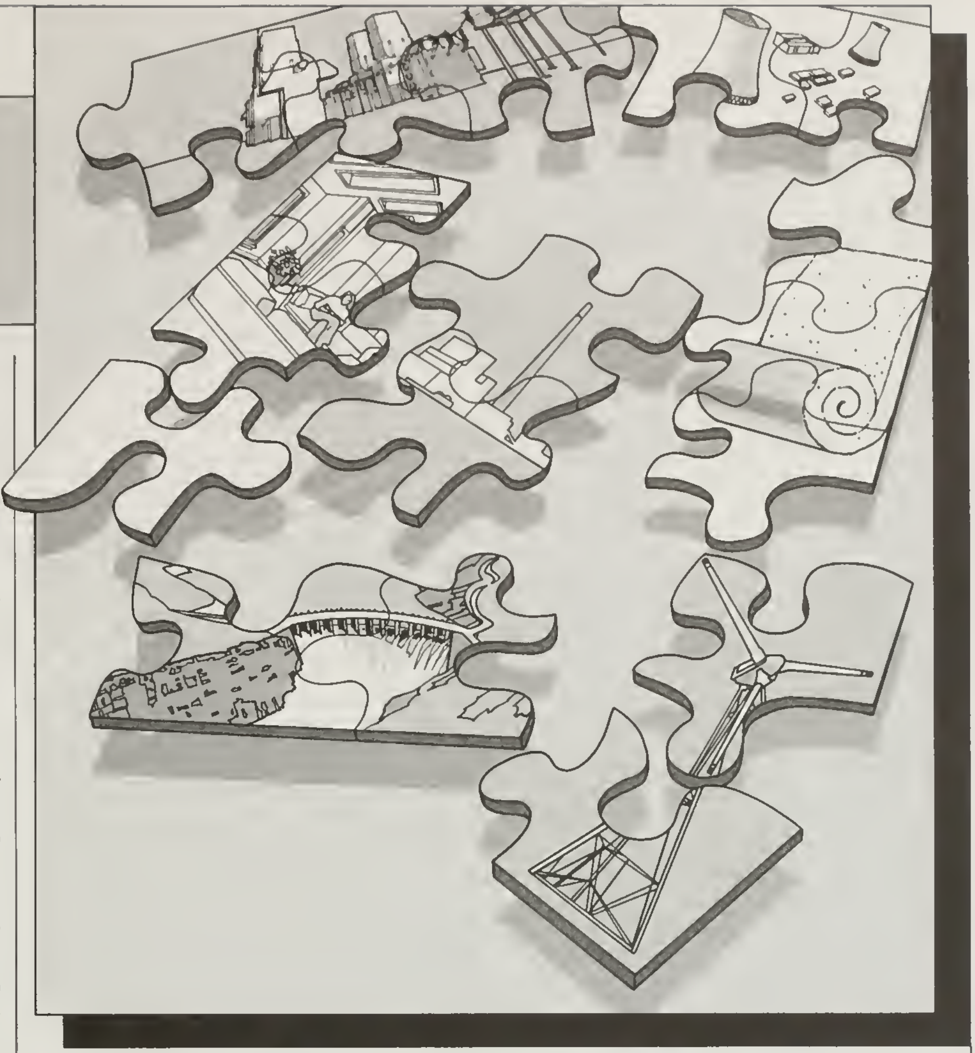
after the region's hydropower assessment study is completed later next year. That study will help determine what sites should be protected from development.

A sizable new resource appears in the Council's portfolio for the first time in the 1985 draft. The Council has identified approximately 2,000 megawatts of power that could be made available to meet firm Northwest loads by using the existing hydropower system more efficiently.

Currently, only the hydropower available in critical (historic low) water years is used to meet firm (contractual) power loads. In an average water year, the hydropower system produces 4,100 additional megawatts. This is called "nonfirm" power because it depends on the weather and therefore cannot be counted on. The draft calls on the region to explore strategies to firm (back up) this nonfirm power with resources that would only be needed occasionally.

The amount of conservation available in the 1983 plan has dropped by nearly 1,000 megawatts in the new draft. The available conservation depends largely on economic growth and the accompanying level of building activity. With slower growth, opportunities to conserve energy decline proportionately. The Council also removed structures that have been weatherized between 1983 and 1985 from the conservation assessment. Nevertheless, a large block of conservation remains.

While the changes in the 1985 draft are significant, they do not represent the only differences between 1983 and 1985. The draft changed noticeably from earlier issue paper positions, thanks to new information and insights brought to the Council's attention through the public involvement process. The Council is currently studying comments submitted on the draft plan during the past two months of public review. It is entirely possible that the final 1985 Power Plan, scheduled for adoption in December, may move even further from the 1983 Power Plan — or closer. ■



Michael Cacy illustration

Public responds to draft power plan

The Draft 1985 Power Plan has been the subject of much comment since its release August 7. The public comment period closed October 25, after hearings were held in each of the four states in the region. Council members and staff also met in consultations with public utility commissions, utility groups and citizen environmental groups.

In September, a Draft Power Plan Workshop was sponsored by the Northwest Public Power Association. The workshop featured four Council members, the Council's executive director, staff members, and representatives from utilities, state energy offices, local governments, industries and conservation groups.

In general, the draft plan has met with agreement over its 20-year load growth forecasts, its emphasis on conservation as the least costly and most reliable resource, and its call for few new generating resources.

Concerns have been raised by the role the model conservation standards will play in the new plan and by the Council's decision to leave two unfinished nuclear plants out of the resource portfolio until the barriers that currently block their construction are resolved.

The Council's inclusion of new strategies to make better use of the Northwest's hydropower system has also stimulated discussion.

Nearly every presentation the Council has made on the draft plan has included a discussion of the need for regional cooperation. In the draft plan, the Council totaled up an estimated $3.8 billion in regional benefits that can accrue if utilities and other power interests work cooperatively to develop the Northwest's most cost-effective resources on a regional basis.

The Council will review and respond to these and other elements in the draft plan at a series of open Council meetings throughout the month of November (see calendar). Adoption of a final 1985 Power Plan is expected in December. –CC

Three Regional Dichotomies

A conversation with Chuck Collins

by Dulcy Mahar

Chuck Collins is not a man to shy away from tough questions. One of the questions he's raising now is whether the Northwest might be in danger of losing its traditional industrial base in its rush to attract new industry. As he sees it, such a question is at the heart of decisions that must be made about electrical power planning in the very near future.

Collins, past chairman of the Northwest Power Planning Council, is what his colleagues would term a "big picture man." He has the ability to absorb masses of raw data and emerge with a cohesive concept and distinct directions. He was, for example, the first one to put the current Northwest electrical power surplus into perspective, noting that it is not the *size* of the current surplus that is unprecedented but the *cost*.

His ability to see the large picture will be missed, as Collins has announced he is leaving the Council to take a new position in Washington State government sometime in early 1986. (See news story page 4.)

Meanwhile Collins is shepherding the Council's Draft 1985 Power Plan and expects to see it through to adoption. His years with the Council have given him a singular perspective on the Northwest electrical power scene. One of the things that he sees from this vantage point is the emergence of "three dichotomies" within the Northwest. As he views it, these dichotomies pose some interesting questions both for economic developers and power planners.

"These dichotomies," Collins says, "are issues that bedevil Northwest industry. They're not the fault of industry; they're simply the nature of the world."

The first dichotomy, according to Collins, is the price of old power versus new power. "Thermal power — nuclear in particular — is expensive anywhere it enters the system, whether it's Texas, Long Island, Indiana, or the Northwest," he points out. "What many in the Northwest have failed to grasp is just how remarkably inexpensive our hydropower is. The existing hydropower is about one-thirtieth the cost of thermal power. We built a huge hydropower system, and it still supplies 75 percent of our power."

What happens when the region adds coal or nuclear plants to this system, he explains, is a cumulative effect. While thermal power represents only a quarter of the current electrical power supply, it is so much more expensive than hydropower that it causes overall power prices to escalate dramatically.

What gives this first dichotomy a "real world" dimension, Collins believes, is the second dichotomy — "the remarkably different interests of old and new power users." Regional growth is chiefly in new services and high technology, not in more traditional industries such as heavy manufacturing. These new industries need reliable electrical power, and the obvious route to reliability is to develop more electricity. Because relatively little development potential remains in the existing hydropower system, new, much more costly power would have to be acquired. While all new power is more expensive than existing hydropower, that is not a problem for new industry, Collins notes, because such industries are not energy-intensive — that is, they are not high users of electricity.

The price of power, on the other hand, is a very real problem for Northwest industries such as pulp and paper, pumped irrigation agriculture, forest products, chemical products, and primary metals — particularly aluminum.

Linda Sullivan photo

Chuck Collins

"The aluminum companies have done a good job of explaining this problem," Collins says, "but it also affects other industries. Some 15 to 20 percent of the total production cost of a pulp mill is electricity. When you're operating in a market with a 10 percent profit margin and the price of electricity doubles, guess what? You're not operating anymore."

Agriculture is another area where electrical prices are critical. "We pump water 400 feet in Eastern Washington, Oregon, and Idaho to grow wheat. It's possible with low-cost electricity. Down in California they have vegetable crops — high-value crops. We can't grow them because of our climate, so we typically grow low-value crops. But these can still be profitable because of low-cost electricity," Collins says.

He points out that a half million primary jobs in the Northwest — outside of agriculture — depend on the traditional industrial base (there are many more jobs created by "ripple effects"). "Take out Boeing and the ports of Portland and Seattle, and we've just described the industrial base of the Northwest," he adds. "It's obvious these industries have radically different needs than the new service-oriented industries."

The third dichotomy Collins describes is between the "have" and "have not" utilities, a distinction that largely parallels the line between public and investor-owned utilities. Utilities in areas that are growing rapidly need or soon will need more power resources.

Most of the population growth in the Northwest has been in the suburban areas surrounding cities, particularly Seattle and Portland, and most of these areas are served by investor-owned utilities. Last year, for example, Puget Sound Power and Light Company had 58 percent of all new electrical energy growth in the region, according to Collins. Yet Puget has so little surplus power that it is the single investor-owned utility currently buying power from the Bonneville Power Administration.

On the other hand, public utilities — with their access to power from the federal dams — have the lion's share of the surplus. This imbalance is exacerbated by the fact that the public utilities, with the exception of Snohomish and Clark counties in Washington, typically serve more rural areas which are growing slowly.

"What we've got to do," Collins stresses, "is to make sure that we are not building expensive power plants in one part of the region, while attics are going uninsulated in other parts."

Collins believes there are two key points that utility planners must grasp. "First, this is an issue that the public understands, and ratepayers have a right to demand that their utilities behave in collective ways that serve the collective good," he says. "The second point is that this is an industry that has secured its cooperation in the past on the basis of ignorance. Long-term productive cooperation is possible only if every party knows his interest well, well enough to know how that interest can be blended with other parties."

As an example, he points to the fate of two unfinished nuclear plants owned by the Washington Public Power Supply System. "It's inconceivable, for example, that WNP-3 can be kept alive for 15 years with public power paying the whole cost, while investor-owned utilities are likely to need the resource. The cost allocation issue has to be sorted out.

Linda Sullivan, Judith Rafferty photos

"My observation on the wars I've seen has been that the utilities which oppose any proposed solution do so because they fear that they'll be tricked — and it's because they've been tricked so many times before," he adds. "Nothing can be accomplished in an environment of suspicion. Nothing is doable without a modicum of trust, and full disclosure is what makes trust possible."

Collins believes it's probably in everyone's interest to have the investor-owned utilities use the federal base system that is currently reserved for public utilities. "But you can't trick the public utilities into letting them use it. It's definitely not in the public customers' interest to have private utilities building plants."

"What scares me is that words like trust and cooperation make me sound Pollyannaish!"

What Collins sees right now in the regional electrical power picture is an environment where people have fragments of information. "It's a forum that rewards the monopoly holders of information. We've got to create a forum in which information is massively disseminated — both pros and cons — on every issue, because there is a vast mutuality of interest. A lot of people share a lot of the same needs."

"Ratepayers have a right to demand that their utilities behave in collective ways that serve the collective good."

Collins calls the first dichotomy — the enormous difference in costs between the existing hydropower and new thermal power — a fact of life. Not much can be done about it. He also feels that all that can be done for the second dichotomy — the divergent interests of the Northwest's traditional industrial base and new industry — is to keep power rates low. "And the only instrument we have to do that," he says, "is the resolution of the third dichotomy. Those who have resources need to share them with those who don't have them."

Collins believes that ambiguities in the Northwest Power Act — or at least perceived ambiguities — are responsible for the present power environment. "In labor relations you don't sign a document without the parties agreeing on what it says. The Northwest Power Act is the biggest offender of this principle. It's clear that all sorts of parties left Washington, D.C., with all kinds of ideas of what the Act did, and all of them can point to a particular paragraph to support their viewpoint. What the Act really did was surrender action to the most able attorney.

"We've got to get that baggage behind us. We can't do anything about these dichotomies as long as there's a monopoly on information and as long as that's what's rewarded. We have a power plan that says there's nearly a $4 billion benefit to cooperation. If one group ends up with $3 billion of that benefit, it's not going to work.

"We're not talking about the free market," he concludes. "These are regulated agencies, because the public wants it that way. If we wanted Iacocca-like results, then we'd focus on competition. But it's been determined that there's a broader public interest here that can only be served through the absence of competition — that's why we have regulation. If that's truly the case, let's get that result — let's work toward the broader public interest." ■

Judith Rafferty photo

BRINGING BACK THE YAKIMA

by Mickey Riley

Preserving the natural habitat of salmon and providing access to that habitat will help save and restore wild and natural runs of these important Northwest fish. This goal is at the heart of major work currently being undertaken in the Yakima River Basin.

The restoration of fish runs in the Yakima Basin in Central Washington is often described as a microcosm of the larger Columbia River Basin Fish and Wildlife Program. Like the Columbia Basin as a whole, the Yakima was once home to far more salmon and steelhead than are able to exist there now.

At one time, an estimated half million adult salmon and steelhead returned up the Yakima and into its tributaries to spawn. In recent years, that number fell to below 1,000 before climbing to last year's count of 2,500. Thanks to new efforts in the Yakima Basin, that number could climb tenfold in the next 20 years.

The decline of the runs in the Yakima began in the early part of this century when irrigation diversion dams were first constructed to bring water to the arid but fertile soil of the vast Yakima Valley. These dams hindered passage of the adult fish returning from their saltwater migration to spawn in their natal streams. In some places, withdrawals of irrigation water left the river itself dry. Fish that did make it to the Yakima Basin were often blocked from the undamaged spawning and rearing habitat above the diversion dams.

Mickey Riley photos

"At one time an estimated half million salmon and steelhead returned to the Yakima to spawn."

New screens at Sunnyside Dam.

On previous page:
Work in progress in Yakima Basin.

While adult fish were locked out, the young ones heading downriver to the ocean all too often found themselves washed into irrigation canals and onto fields. There were no screens, or inadequate ones, to guide them away from the canals and into the main stream.

Like the mainstem of the Columbia, the Yakima has two major problems: inadequate fish passage and guidance facilities, and a lack of sufficient stream flows to move fish up and down the river. Both rivers are undergoing substantial restoration work to correct these problems.

Sunnyside Dam

This summer, three new facilities at the Sunnyside, Wapato, and Naches-Cowiche dams were completed to help juvenile and adult fish passage. The installation of 17 new fish screens at Sunnyside Diversion Dam is perhaps the most visually impressive of the new constructions. The screens, 12 feet long and 14 feet wide, span the canal diagonally. Angled placement allows the juvenile fish to be guided gently by the stream flow away from the screens and into a bypass which returns them to the main river.

The new screens, designed and constructed by the Sunnyside Irrigation District, were funded by the Bonneville Power Administration. According to Bob Tuck, fisheries biologist for the Yakima Indian Nation, this may be the only major project in the basin where an irrigation district is in charge of the project design and construction. "We are extremely pleased with the job Sunnyside Irrigation District did," says Tuck. "They came in on time and under budget — and with a good product. You can't ask for more."

Sunnyside Dam also has a new fish ladder, and two more are under construction. Sunnyside's original ladders were designed and installed in 1907. By the 1970s, they were technically obsolete and in very poor condition. The new ladders make it possible for returning adult fish to get to the upstream habitat to spawn.

The Sunnyside project is the culmination of a broad-based cooperative effort among state and federal fishery agencies and Indian tribes. Work at Sunnyside was coordinated by the Northwest Power Planning Council, the Yakima Indian Nation, the Bureau of Reclamation and Bonneville. Three million dollars have been spent so far at Sunnyside, with the total estimated budget for this project set at $5 million.

Wapato Dam

Another new facility is further upstream at the Wapato Diversion Dam. The old dam, built in 1917, had no fish ladder on the west branch (the river is divided by an island) and two very old ladders on the east branch. This June, a new fish ladder was completed on the west branch. Locals have nicknamed the concrete block that houses the ladder, the "USS Wapato."

An additional ladder for the east branch of the dam and new fish guidance screens are currently being designed. Their construction is expected to be completed this November. Estimated cost of the project, also funded by Bonneville, is $7.1 million.

Naches-Cowiche Dam

Unlike the Sunnyside and Wapato dams, the Cowiche Diversion Dam on the Naches River is not an irrigation diversion. This dam diverts water for the city of Yakima.

From the height of the dam, it appears fish could easily jump it. However, Tuck explained that salmon and steelhead can only leap six to eight feet under ideal water flow conditions. At Cowiche, the old spillway itself was trapping debris and blocking fish. Sections of the spillway had broken loose and needed replacing.

This summer, the whole spillway was rebuilt, with a ladder, screen and fish counting equipment added. The new facilities will provide passage for the upstream migration of spring chinook and steelhead.

The Yakima Master Plan

"One of our major goals in the fish and wildlife program is the protection of wild and natural salmon and steelhead stocks," explains Kai Lee, chairman of the Council's fish and wildlife committee. "Preserving genetic diversity is essential to the vigor and survival of the species. Without this diversity, stocks lose their ability to adapt to changing environments. That's why it's so important that we preserve the existing natural habitat as well as ensure access to that habitat.

"We will, of course, have to supplement hatchery-reared fish for those stocks that are severely depressed," he adds. "There are lots of unknowns regarding the impact of hatchery fish on wild fish populations. This is one of the reasons why the Yakima is such a prime test site. In the upper Yakima there is still plentiful salmon and steelhead spawning and rearing habitat. We will be able to raise hatchery fish and plant them in the Yakima to see the effects of carefully adding these new fish."

If such facilities are to benefit the basin in both research and production, they must be carefully planned and managed. Consequently, the Council is coordinating the development of what is being called the "Yakima Hatchery Master Plan."

According to Ron Eggers, biological services manager for the Council, hatchery facilities will be built for raising juvenile fish to plant in the Yakima and possibly elsewhere in the Columbia Basin. "Before the design of the facility is completed," says Eggers, "there are a number of factors that need to be determined: how many fish to release each year; how many to expect back; what species of fish; and where to release them."

"Right now," says Eggers, "we have a consultant evaluating possible sites for the hatchery facilities and developing a conceptual design for the sites. We also have an intergovernmental agreement with the Yakima Indian Nation to coordinate the studies on the number and type of fish to breed and on the best sites for releasing those fish."

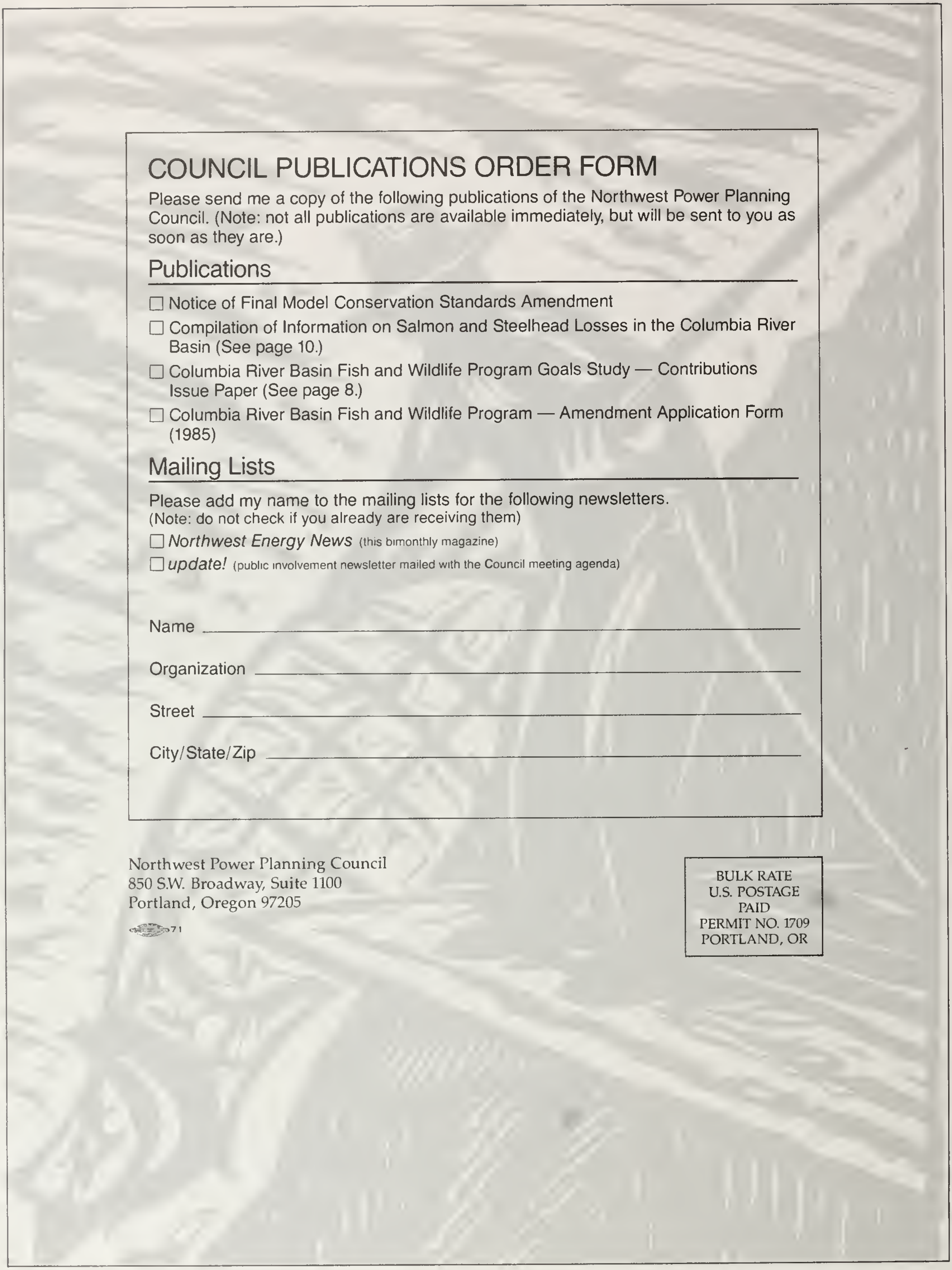
The hatchery project will help enhance stocks that are depleted. "But there are still other issues," notes Lee. "Water quality and quantity are both necessary to ensure survival of all those fish, and everyone is working towards a solution to these problems. We are hopeful that creative solutions to the issues of water conservation and additional storage capacity will be found over the next few years," Lee added.

The Council's fish and wildlife program has been described as the most ambitious natural resource restoration program in the world. In some ways, work in the Yakima Basin can be seen as a demonstration of the potential for improvement in the larger basin. Project Manager Eggers feels, "We are off to a very good start. The Council's program was adopted only three years ago, and already we have three major construction projects completed in the Yakima. The people in the basin have proven that it works." ■

"The people in the Yakima Basin have proven that it works."

The "USS WAPATO" fish ladder at Wapato Dam.

A new spillway and fish ladder for the Cowiche Dam on the Naches River.



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- ☐ Columbia River Basin Fish and Wildlife Program Goals Study — Contributions Issue Paper (See page 8.)
- ☐ Columbia River Basin Fish and Wildlife Program — Amendment Application Form (1985)

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